Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

DVS 304

Digital Video Scaler Series
DVS 304, DVS 304 D, DVS 304 A , DVS 304 AD

Precautions

Safety Instructions • English

⚠ **This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.**

⚡ **This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.**

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

⚠ **Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).**

⚡ **Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.**

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

⚠ **Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.**

⚡ **Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.**

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

⚠ **Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.**

⚡ **Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.**

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrian implicar riesgos.

安全须知 • 中文

⚠ 这个符号提示用户该设备用户手册中有重要的操作和维护说明。

⚡ 这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'Il y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

警告

电源 • 该设备只能使用产品上标明的电源。设备必须使用有地线的供电系统供电。第三条线（地线）是安全设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线，避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

Quick Start — DVS 304

Installation

Step 1

Refer to the application examples at the end of this section. If connected to a power source, turn off power to the scaler, the input and output devices, and remove power cords.

Step 2

Install the four rubber feet on the bottom of the DVS 304 scaler, or mount the scaler in a rack (see chapter 2 "Installation and Operation").

Step 3

Attach input devices to the scaler (see chapter 2 "Installation and Operation").

Rear panel video inputs

SDI input (DVS 304 D or AD models only)

Attach an SDI source to this optional BNC.
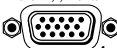
Input 1: Composite video

Input 2: Composite/S-video/YUVi/YUVp
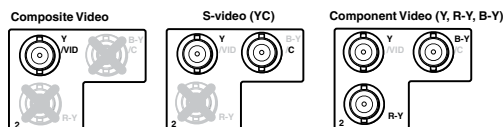
Input 3: S-video

Input 4: Composite/S-video/YUVi/YUVp/RGBcvS/

RGB scaled/RGB pass through

Step 4

Attach output devices to the scaler.

Rear panel video outputs

Output BNC connectors
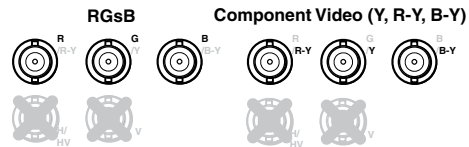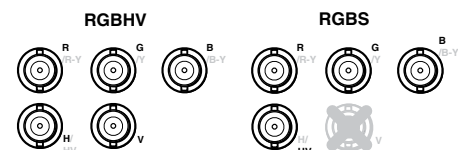
Output 15-pin HD connector

NOTE *You can connect both outputs simultaneously to two different displays. The sync format is the same for both outputs.*

Step 5 (for DVS 304 A or DVS 304 AD only)

Connect up to four balanced or unbalanced stereo audio input devices to the DVS 304 as shown below. Each audio input has a 3.5 mm, 5-pole captive screw connector.

For detailed wiring instructions, see chapter 2 "Installation and Operation".

Balanced and unbalanced audio input
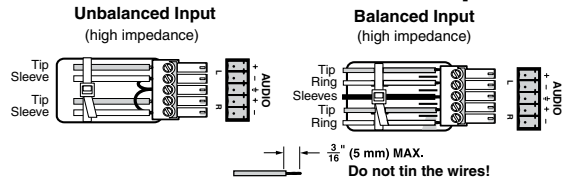
Balanced and unbalanced audio output
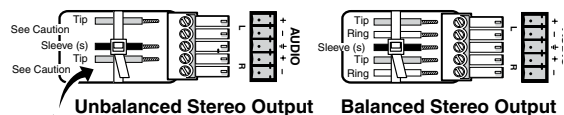
CAUTION

For unbalanced audio, connect the sleeve(s) to the center contact ground. **DO NOT** connect the sleeve(s) to the negative (-) contacts.

Step 6

Plug the DVS 304, and the input and output devices into a grounded AC source, then turn on the input and output devices.

Step 7

Use the front panel controls and LCD menu screens (shown in Appendix A) or RS-232 programming to configure the scaler.

See chapter 2, "Installation and Operation" for more detailed operating procedures, chapter 3, "Serial Communication" for programming information, and chapter 4, "Ethernet Control" for details on the default Web pages.

DVS 304 Application example

DVS 304 A Application example

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Chapter One

Introduction

About this Manual

About the DVS 304, DVS 304 D, DVS 304 A, DVS 304 AD

Introduction

About this Manual

This manual discusses how to install, configure, and operate the Extron DVS 304 video and RGB scaler and how to operate the optional IR 902 infrared remote control (part #**70-495-01**).

Throughout this manual the terms "DVS", "digital video scaler", and "scaler" are used interchangeably to refer to the same product. All instances refer to all models in the series unless noted otherwise.

About the DVS 304, DVS 304 A, DVS 304 D, and DVS 304 AD

The DVS 304 series (DVS 304, DVS 304 A, DVS 304 D, and DVS 304 AD) are 4-input, 1-output high performance RGB and video scalers offering 62 output rates, including HDTV. These products provide scaling solutions for boardrooms, conference rooms, and home theaters, as well as rental and staging applications.

The two DVS 304 scalers come in a half rack model (DVS 304) with an SDI option, and a full rack model (DVS 304 A) with an SDI option and balanced/unbalanced audio.

All versions of the DVS 304 can be controlled remotely using Extron's Simple Instruction Set (SIS™) commands via RS-232, or through an Ethernet LAN connection using embedded Web pages.

The DVS 304 scales from composite video, S-video, component (Y, R-Y, B-Y) video, and RGB video to computer-video (RGBHV/RGBS/RGsB) or HD component. It can also output to two separate display devices via individually buffered BNC and 15-pin HD connectors.

Controlling the DVS 304 video and RGB scaler

The DVS 304 can be controlled using one or more of the following methods:

- The front panel controls.

- A computer, a touch screen panel, or any other device that can send and receive the serial communications through the RS-232 port. The Extron Simple Instruction Set (SIS) is a set of simple keystroke commands that can be used with any such devices, and Extron's control software for Windows® provides a graphical interface for controlling the scaler from a computer.

- The optional IR 902 remote control, replicating most of the front panel controls.

- Ethernet control via IP Link, enabling the DVS 304 to be controlled and pro-actively monitored over a LAN, WAN, or the Internet.

Features

Four inputs:

SDI video input (optional) — One BNC connector on the rear panel accepts SDI video. During setup, the SDI input is assigned to input 1, 2, 3, or 4 (the default is none).

Input 1 — One BNC connector on the rear panel accepts composite video.

Input 2 — Three BNC connectors on the rear panel accept composite video, S-video, or component video.

Input 3 — A 4-pin mini-DIN connector accepts an S-video signal.

Input 4 — A 15-pin HD connector accepts an RGB, component video,

S-video or composite video signal.

RGB and video scaling — Provides a high performance scaling engine with the capacity to scale standard definition video, high definition video, and computer-video signals up or down in resolution.

Picture Control — Allows size, position, brightness, contrast, color, tint, detail, zoom and pan adjustments for each input.

Picture-In-Picture — Allows for a low resolution (YUVi, S-video, and composite video) input or a high resolution (VGA and YUVp) input for the primary or secondary picture.

Memory and input presets — Memory presets save sizing, positioning, and picture control settings.

Input presets (on input 4 only) save input configuration, picture control, and OSD (on-screen display) text.

Auto image™ — Auto image automatically sizes, centers, and optimizes the image to that of the scaled output rate, filling the window with the image.

IP Link® — IP Link-enabled products offer an integrated Web server with high performance architecture, global compatibility with industry standard Ethernet communication protocols, multi-user support, and a Web-based asset management application specifically designed to work with products that include IP Link technology.

Buffered video outputs — Five rear-panel BNC connectors and one VGA-type 15-pin HD connector provide connections for RGB or Y, R-Y, B-Y output. Both outputs (the BNCs and 15-pin HD connector) are active at all times for simultaneous output.

Device control — The scaler has four methods of control; by the scaler's front panel, via a computer or other RS-232 control device, using the optional IR 902 remote control, or via Signal Enhancements Windows Control Program.

Scaled outputs — The DVS 304 offers 62 different output rates.

RS-232 configuration — The DVS 304 can be configured by using the Extron control software for Windows or by using a third party control system.

Front panel security lockout (executive mode) — To prevent accidental changes to the unit's settings, the DVS 304 provides front panel lockout of all controls except input switching.

3:2 pull down detection for NTSC and 2:2 film detection for PAL video sources — These patented, advanced film mode processing features, help maximize image detail and sharpness for video sources that originated from film. When film is converted to NTSC video, the film frame rate has to be matched to the video frame rate in a process called 3:2 pull down. "Jaggies" and other image artifacts can result if conventional de-interlacing techniques are used on
film-source video. The DVS 304's advanced film mode processing recognizes signals that originated from film. The DVS 304 then applies video processing algorithms that optimize the conversion of video that was made with the 3:2 pull down process. This results in richly detailed images with sharply defined lines. A similar process is used for PAL film-source video.

Versatile mounting options — The DVS 304 and DVS 304 D are 1U high, half rack wide rack mountable devices. Alternatively, they can be placed on a table or other furniture. Rubber feet and rack mounting hardware are included.

The 1U high and full rack DVS 304 A and DVS 304 AD (audio models) can be rack mounted using included rack/through-desk mounting brackets.

Options and accessories

The DVS 304's optional equipment includes:

- **IR 902 remote control** — Extron's IR 902 (part **#70-495-01**) is an infrared remote control which replicates most of the front panel controls of the DVS 304 (except the Menu and Next buttons).

- **SDI input card** — Serial digital interface (SDI) input can be added to the DVS 304 model by the installation of an SDI input card (part **#70-168-01**).

DVS 304

Chapter Two

2

Installation and Operation

Installation and Operation

Mounting the Scaler

The DVS 304 is 1U high, half rack wide, and is rack mountable. Alternatively, it can be placed on a table or other furniture. Rubber feet and rack mounting hardware are included.

The 1U high and full rack DVS 304 A (audio model) can be rack mounted using included rack/through-desk mounting brackets.

Tabletop/desktop placement

Four self-adhesive rubber feet are included with the DVS 304. For tabletop use, attach one foot to each corner of the bottom side of the unit and place the unit in the desired location.

UL guidelines for rack mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the DVS in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the DVS 304 in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.

2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.

3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.

4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Rack mounting the DVS 304

1. If feet were installed on the bottom of the DVS 304, remove them.

2. Place the DVS 304 on one half of the 1U (one unit high, one unit wide) rack shelf (part #60-190-01). Align the front of the DVS 304 with the front of the shelf, and align the threaded holes on the bottom of the DVS 304 with the holes in the rack shelf.

3. Attach the DVS 304 to the rack shelf with the two provided 4-40 x 1/16" machine screws. Insert the screws from the underside of the shelf, and securely fasten them into diagonally-opposite corners (figure 2-1).

False front panel uses 2 front holes.

(2) 4-40 x 3/16" Screws

Use 2 mounting holes on opposite corners.
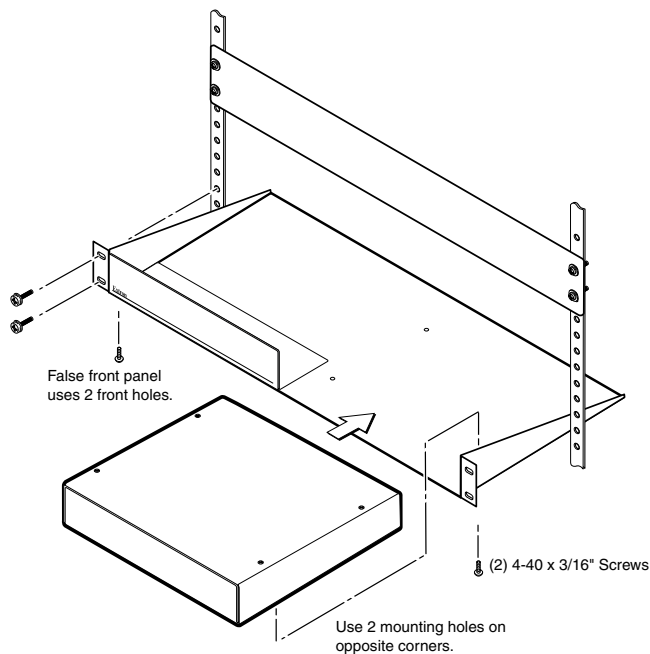
Figure 2-1 — Rack mounting a half rack device

4. Attach the false front panel (provided with the universal rack shelf) to the unoccupied side of the rack (as shown above), or install a second half-rack-width device in that side by repeating steps 1 – 3.

5. Attach the rack shelf to the rack using four 10-32 x 3/4" bolts (provided). Insert the bolts through #10 beveled washers, then through the holes in the rack ears and rack (figure 2-1).

Rack mounting the DVS 304 A

To mount the DVS 304 A in a rack, do the following:

1. If feet were installed on the bottom of the DVS 304, remove them.

2. Attach the included rack/through-desk mounting brackets
   (part #70-077-03) to the unit using eight machine screws supplied with the
   mounting kit.

Rack Mount
Bracket
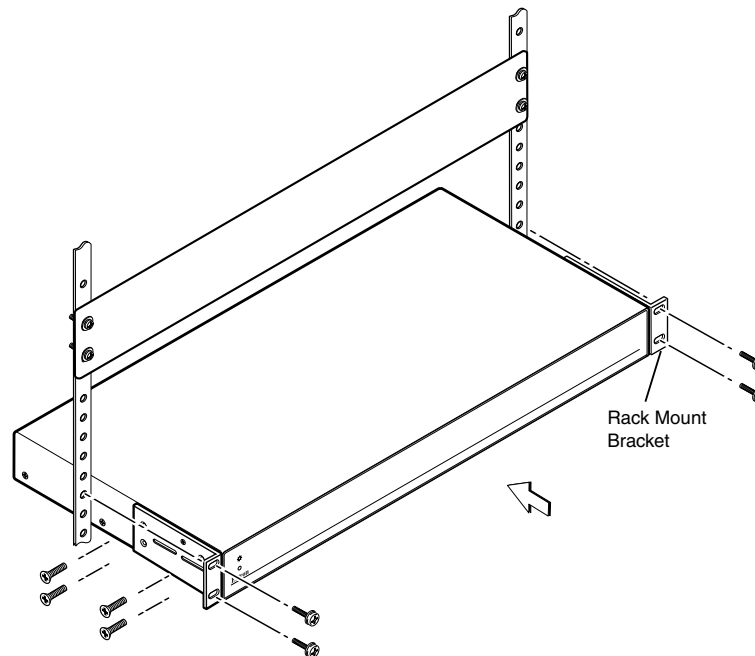
Figure 2-2 — Attach the mounting brackets and install in rack

3. Insert the unit into the rack and align the holes in the mounting brackets with
   the holes in the rack. Use four machine screws to attach the brackets to the
   rack.

Application diagram

The diagram shown below is an example of a typical DVS 304 AD application with cable connections.

Digital Tape Deck
w/ SDI Output

RS-232 Control

TCP/IP
Network

Sound System

Extron
DVS 304 A
Digital Video Scaler
w/ Audio

Audio

Projector
(RGB)

Laptop
(RGB)

DSS Receiver
(S-video)

DVD
(Component)

VCR
(Video)
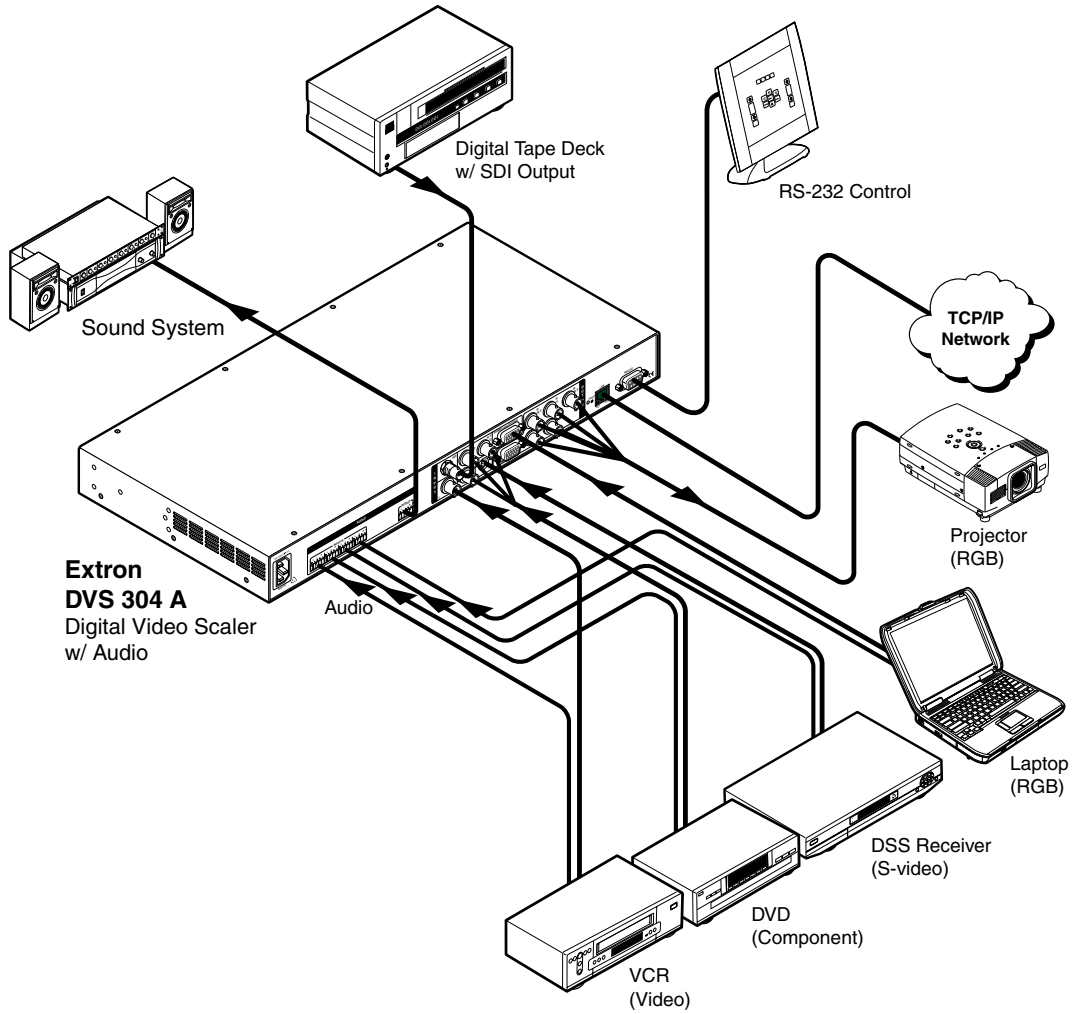
Figure 2-3 — Application diagram example of the DVS 304 AD

Installation and Operation, cont'd

Rear Panel Features

The rear panels of the DVS 304 D and DVS 304 AD models (figures 2-4 and 2-5) contain all of the possible connectors available on the DVS 304 series of scalers.
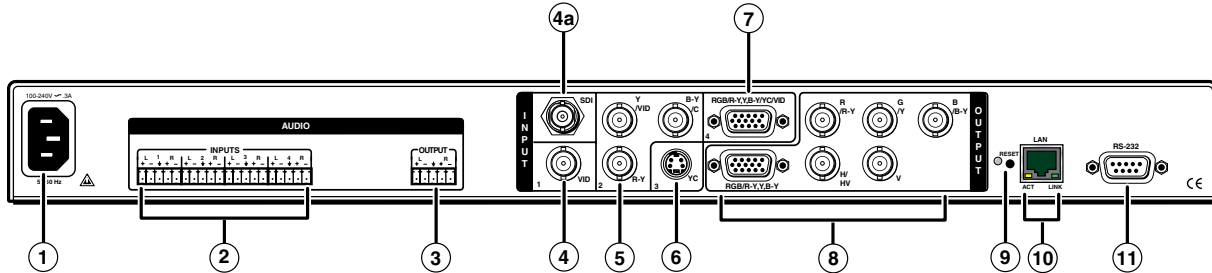
Figure 2-4 — DVS 304 AD rear panel connectors
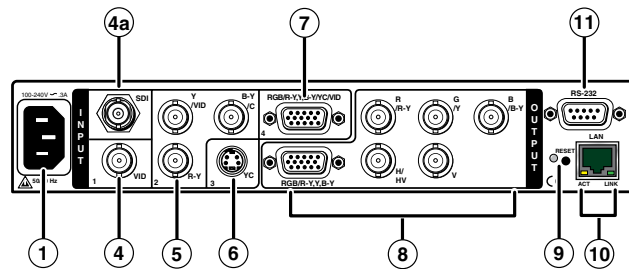
Figure 2-5 — DVS 304 D rear panel power connector

1 **AC power connector** — Plug a standard IEC power cord into this connector to connect the scaler to a 100 to 240 V AC, 50 Hz or 60 Hz power source. The front panel control and input selection buttons light in sequence during power-up.

2 **Audio input** — Plug up to four, 3.5 mm, female, five-pole, captive screw connectors for balanced/unbalanced variable audio input.

3 **Audio output** — Plug one, 3.5 mm, female, five-pole captive screw connector for balanced/unbalanced variable audio output.

4 **Video input 1: Composite video** — Connect a composite video signal to this female, BNC connector.

4a **Optional SDI (serial digital interface) input connector —** Connect an SDI signal to this female BNC connector. During setup, the SDI input can be assigned to one of the other unused inputs.

5 **Video input 2: Composite/S-video/Component** — Connect composite video, S-video, and component video signals. Connect cables for the appropriate signal type, as shown here.
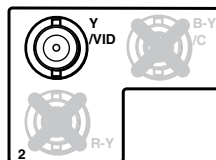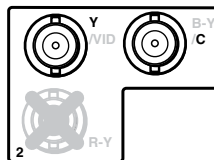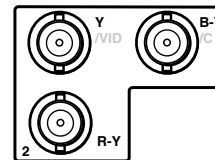
6 **Video input 3: S-video —** Connect an S-video signal to this 4-pin, mini-DIN female connector.

⑦ **Video input 4: RGB/R-Y, Y, B-Y/YC/VID** — Connect RGBHV, RGBS, RGsB, RGBcvS, YUVi, YUVp, S-video and composite video through this 15-pin HD connector. See pin configurations below.
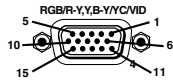
Signal	Input 4 Pin Configuraton				
	Pin 1	Pin 2	Pin 3	Pin 13	Pin 14
RGBHV	R	G	B	H	V
RGBS	R	G	B	S	
RGsB	R	G	B		
YUV	R-Y	Y	B-Y		
S-video		Y	C		
Video		Vid			

NOTE *Equipment following the SCART interconnection standard may be connected to the RGBcvS input cabling configuration.*

⑧ **RGB (RGBHV, RGBS, RGsB) or HD component (R-Y, Y, B-Y) video BNC outputs** — Connect coaxial cables from a display device to these BNCs for a scaled or pass-through RGB or a scaled component video output. The output can be scaled to 62 different output rates (see table on page 2-15).
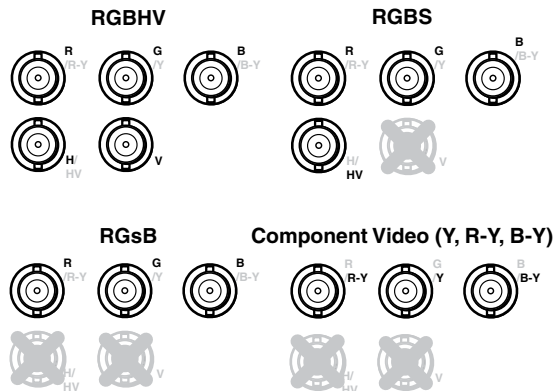
RGB or HD component (R-Y, Y, B-Y) 15-pin HD video output — Connect an RGB video display or HD component video display to this HD 15-pin connector.

NOTE *Both ⑧ outputs are buffered and can be connected simultaneously to two different displays. The sync and video formats will be the same for both outputs.*

⑨ **Reset button and LED** — A recessed button that allows for manual resets using an Extron Tweeker, pointed stylus or ballpoint pen. The unit can be reset to four modes (see "Resetting the Unit" later in this chapter for additional information).

The green LED flashes to show the reset mode indicators and that power is on.

⑩ **LAN connector** — Plug an RJ-45 jack into this socket to connect the unit to a computer network. Use a patch cable to connect to a switch, hub, or router. See the following page for wiring information.

LAN Activity LED — A blinking yellow LED indicates LAN activity.

Link LED — The green LED lights to indicate a good LAN connection.

Installation and Operation, cont'd

Pins:
1 2 3 4 5 6 7 8

Side View

Insert
Twisted
Pair Wires

RJ-45 Connector

Straight-through Cable (for connection to a switch, hub, or router)			
End 1		**End 2**	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

Crossover Cable (for direct connection to a PC)			
End 1		**End 2**	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

Figure 2-6 — Wiring the RJ-45

⑪ **Remote (RS-232/contact closure) 9-pin port** — This connector provides for two-way RS-232 communication. See chapter 3, "Serial Communication", for information on how to install and use the control software and SIS commands.
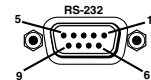
RS-232

The default protocol is 9600 baud, 1 stop bit, no parity, and no flow control.

The rear panel RS-232 9-pin D female connector has the following pin assignments:

Pin	RS-232 function	Description
1	Input #1	Contact closure
2	Tx	Transmit data
3	Rx	Receive data
4	Input #2	Contact closure
5	Gnd	Signal ground
6	Input #3	Contact closure
7	Input #4	Contact closure
8	–	No connection
9	–	Reserved

The Remote connector also provides a way to select an input using a remote contact closure device. Contact closure control uses pins on the RS-232 connector that are not used by the RS-232 interface (see preceding table).

To select a different input number using a contact closure device, short the pin for the desired input number to logic ground (pin 5).

Front Panel Features

The front panel buttons, controls, LCD, and infrared sensor are found on all models of the DVS 304 scaler series. The LEDs beside each input button will light green when the button is pressed.
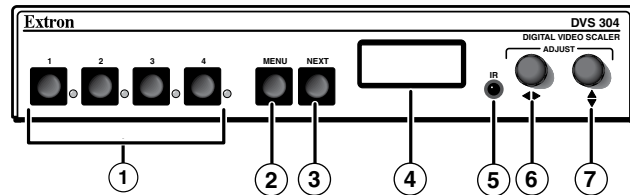
Figure 2-7 — DVS 304 and DVS 304 A front panel

Input selection buttons

1. **Input LEDs —** The LED of the selected input lights when pressed. A blinking LED indicates an audio breakaway input (audio models only).

   Composite input button — Input 1 selects composite video input.

   Composite/YC/component input button — Input 2 selects composite video, YC, or component video input.

   S-video input button — Input 3 selects the S-video input.

   Universal input button — Input 4 selects the RGB scaled (RGBHV, RGBS, RGsB), RGB pass-through, YUVi, YUVp, S-video and composite video.

Menu navigation buttons

2. **Menu button** — Use this button to enter and move through the main menu system in the DVS 304. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

3. **Next button** — Use this button to step through the submenus in the DVS 304 menu system. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

LCD menu display and controls

4. **LCD** — Displays configuration menus and status information. See the "Menus, Configuration, and Adjustments" section in this chapter for details.

5. **Infrared sensor** — This sensor is used to receive infrared (IR) signals from the IR 902 remote control. See the "IR 902 Infrared Remote Control" section in this chapter for details.

6. **Adjust horizontal (◄►) knob** — In the menu system, rotate this knob to scroll through menu options and make adjustments.

7. **Adjust vertical (♦) knob** — In the menu system, rotate this knob to scroll through menu options and make adjustments.

Menus, Configuration, and Adjustments

Scaler configuration and adjustments can be performed by using the embedded Web pages and the Windows-based control program (see chapter 3, "Serial Communication" for details) or by using the front panel controls and the menus that are displayed on the DVS 304's LCD screen. These menus are used primarily when the scaler is first set up.

Moving through menus by using front panel controls

Menu button — Press the Menu button to activate menus and scroll through the eight main menus.

Next button — Press the Next button to move between the submenus of a selected main menu. Pressing the Next button during input configuration causes the current input's number and format type to be displayed on the LCD

Adjust (◄►,♦) knobs — In configuration mode, rotate the Adjust horizontal (◄►) knob and Adjust vertical (♦) knob to scroll through submenu options and to make adjustment selections. Refer to the flowcharts in this chapter and to specific sections for explanations on knob adjustments.

Menu overview

The default menus appear on the LCD when no adjustments are actively being made. They cycle between the screen showing the model of the scaler (DVS 304 or DVS 304 A) and the screen that shows the active input's number and video format, as shown below.
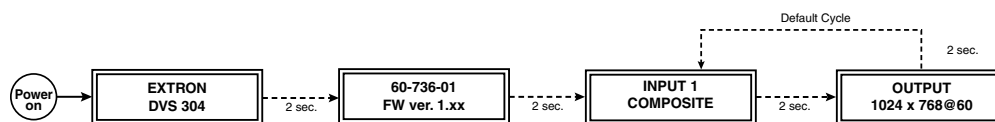
Figure 2-8 — Default menus

NOTE *From any menu or submenu, after 20 seconds of inactivity the DVS 304 will save all adjustment settings and time-out to the default menus.*

The main menus are shown on the following pages. Use the Menu button to scroll between them.

NOTE *If no signal is present on the currently selected input,* NO SIGNAL *appears in place of a signal value, e.g. INPUT 4 NO SIGNAL.*

Default Cycle

EXTRON **DVS 304**	2 sec.	**60-736-01** **FW version 1.00**

Power on → **EXTRON DVS 304** -- 2 sec. --> **60-736-01 FW version 1.00** -- 2 sec. --> **INPUT 1 COMPOSITE** -- 2 sec. --> **OUTPUT 1024 x 768@60**

2 sec.

MENU

↓

START AUTO
IMAGE ON IN1

MENU

↓

INPUT
CONFIG

MENU

↓

PICTURE
CONTROL

MENU

↓

OUTPUT
CONFIG

MENU

↓

AUDIO
CONFIG   **(Audio models only)**

MENU

↓

MEMORY
PRESETS

MENU

↓

IP
CONFIG

MENU

↓

ADVANCED
CONFIG

MENU

↓

MENU — **TO EXIT MENU**
PRESS NEXT — NEXT

Figure 2-9 — Main menus

NOTE *To return to the default screens, allow the DVS 304 to time-out (after 20 seconds). Alternatively, press the Menu button repeatedly until the Exit menu appears, then press the Next button.*

NOTE *Submenus are accessed from a main menu by pressing the Next button. When in a submenu, press the Menu button to go out of the submenu and back to the active main menu.*

Start auto image

Auto imaging allows you to "auto size" and "auto center" the selected image to fill the screen. The processor measures the sync frequencies of an incoming video source and uses an internal table to set the active image area, total image area, and the sampling frequency.

If an unknown input is connected to the DVS 304, the processor measures and estimates the resolution of the incoming video.

To turn on this feature, select the Advanced Config menu and choose "On".

Start auto imaging on a selected input by pressing "Next" after the Start Auto Image menu.
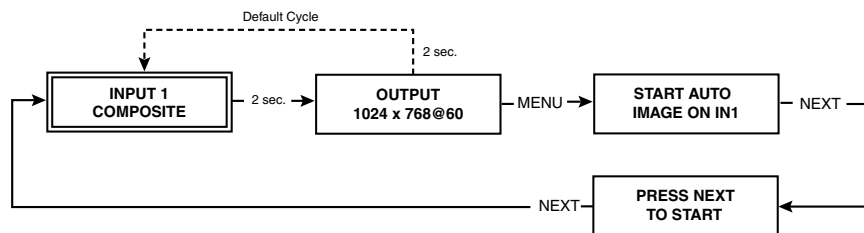
Figure 2-10 — Start auto image menu

NOTE *An input with a vertical refresh rate less than 40 Hz will have to be manually centered and sized, using H/V Start and H/V Active under the Input Config menu. When a rate with a low vertical refresh rate (e.g. 720p 29.9 Hz) is applied and an Auto Image command is issued, the DVS 304 will refer to default values instead of performing a true Auto Image.*

Input configuration

The following flowchart provides an overview of the Input Configuration submenus and the options for each setting.

Figure 2-11— Input Configuration menus

Input 1 video type

Input 1 can only input composite video, no other video types are selectable for this input.

Input 2 video type

Rotate either the Adjust horizontal (◄►) knob or Adjust vertical (♦) knob while in the Input 2 submenu to select the appropriate video format (composite, S-video, YUV, YUVp, YUV Auto) for input 2.

When input 2 is set to YUV Auto, the scaler will detect if YUVi or YUVp is applied and will set the input accordingly. The default is YUVi video.

Input 3 video type

Input 3 can only input S-video, no other video types are selectable for this input. The SDI input (if any) can be assigned to any input from the Input Configuration menu.

Input 4 video type

Rotate the Adjust horizontal (◄►) knob while in the Input 4 submenu to select the appropriate video format (Composite, S-video, RGBcvS, YUV, YUVp, RGB scaled, RGB pass-through, Auto detect).

When input 4 is set as "auto detect", the scaler will switch to the new configuration whenever it detects an input type change. The default is RGB scaled.

SDI input (SDI IN)

Rotate either the Adjust horizontal (◄►) knob or Adjust vertical (♦) knob while in the SDI Input submenu to select the input # for the SDI input. The SDI input can be assigned to inputs 1, 2, 3, 4, or none (*). The default is none.

SDI de-interlacer options

Rotate either the Adjust horizontal (◄►) knob or Adjust vertical (♦) knob while in the SDI Deinter submenu to set the appropriate de-interlacing method (Standard or Flip). If the SDI input is displayed with a significant amount of jaggies, use this setting to flip the odd and even fields when de-interlacing the incoming SDI signal. The default is Standard.

Picture control

The Picture Control menu includes all of the picture settings for the scaler including positioning, sizing (horizontal and vertical control), brightness and contrast, color saturation, tint, detail (sharpness of the picture), and zooming (see figure 2-12).

The pan feature is only available when zoom is over 100%.

Color, tint and pan controls are available to applicable signals only.
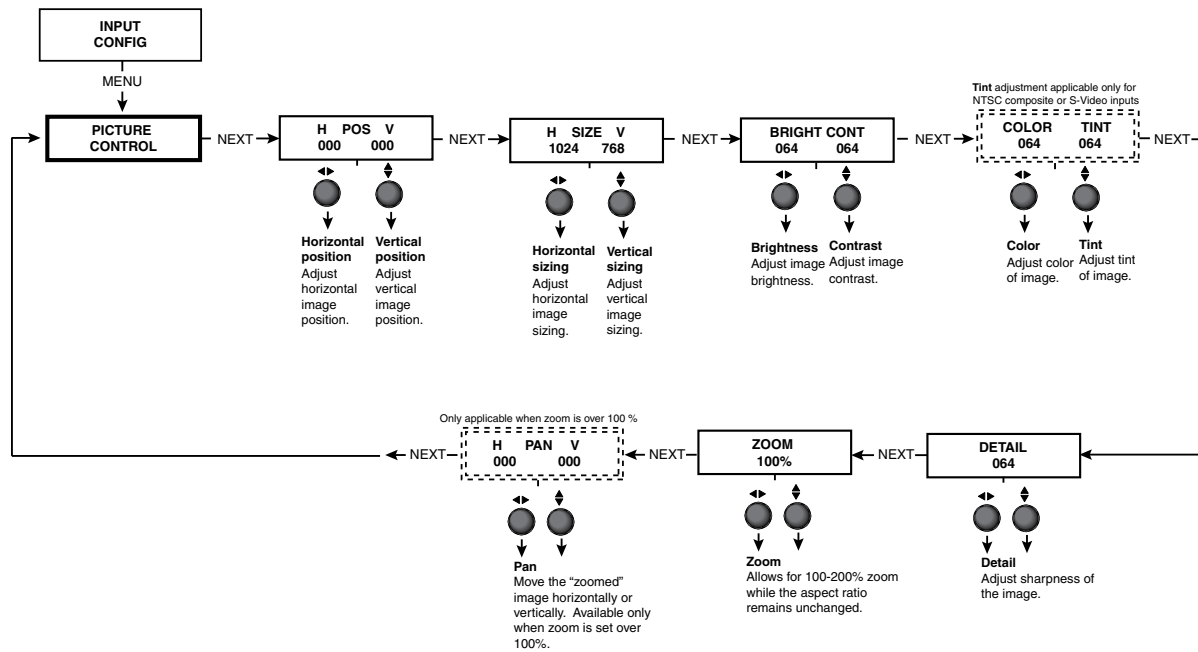
Figure 2-12— Picture control menu

Output configuration

The output configuration menu allows you to select the scaler output rate from different resolutions, refresh rates, sync types (RGBHV, RGBS, RGsB and Y, B-Y, R-Y), and sync polarity.
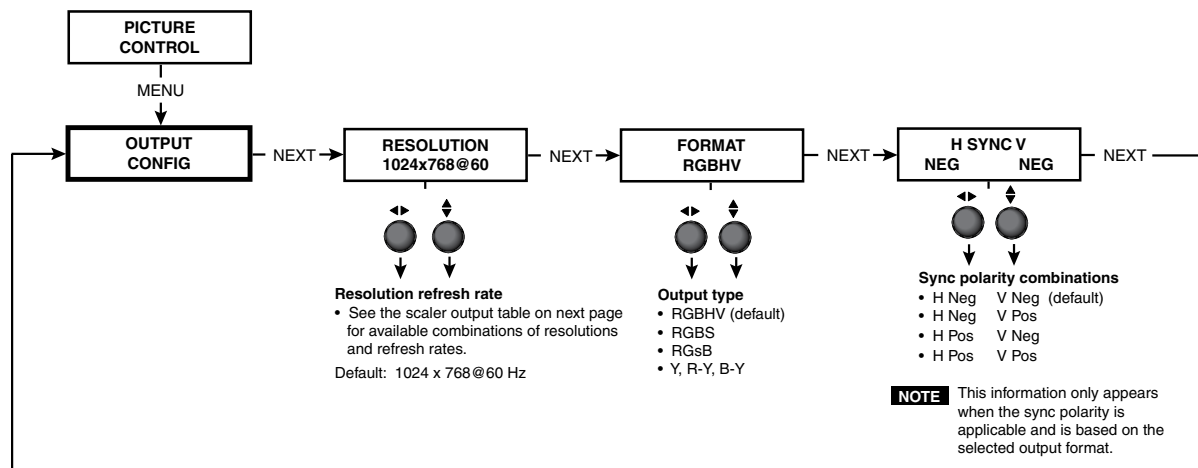
Figure 2-13— Output Configuration menu

Resolution and refresh rates

Rotate the Adjust horizontal (◄►) knob while in this submenu to select one of the available combinations of output resolutions and refresh (vertical scanning) rates.

Rotate the Adjust vertical (♦) knob while in this submenu to select one of the available refresh rates.

The default resolution and rate for the DVS 304 is 1024 x 768 @ 60Hz.

Available Scaler Output Resolutions and Rates								
Resolution	24 Hz	50 Hz	60 Hz	72 Hz	75 Hz	96 Hz	100 Hz	120 Hz
640 x 480		X	X	X		X	X	X
800 x 600		X	X	X		X	X	X
852 x 480		X	X					
1024 x 768		X	X	X		X		
1024 x 852		X	X	X		X		
1024 x 1024		X	X	X				
1280 x 768		X	X	X		X		
1280 x 1024		X	X	X				
1360 x 765		X	X	X				
1365 x 768		X	X	X				
1365 x 1024		X	X					
1366 x 768		X	X	X				
1400 x1050		X	X					
1600 x 1200		X	X					
480p			X					
576p		X					X	
720p		X	X					
1080i		X	X					
1080p	X	X	X					
1440 x 900			X		X			
1680 x 1050			X					
1280 x 800		X	X					

Output Signal

Using either the Adjust horizontal (◄►) or Adjust vertical (♦) knob, select the output video format required by the display: RGBHV (default); RGBS; RGsB; Y, R-Y, B-Y.

Sync Polarity

The display or projector may require a particular combination of horizontal (H) and vertical (V) sync signal polarities.
Select the appropriate combination of positive or negative H and V sync by rotating either the Adjust horizontal (◄►) or Adjust vertical (♦) knob.

NOTE *If the previous output signal was specified as RGsB or Y, R-Y, B-Y, or RGBS, this submenu will not be displayed because this menu is only active for RGBHV.*

Installation and Operation, cont'd

Audio configuration (DVS 304 A and DVS 304 AD only)

Audio Configuration allows the input level to be adjusted between –15 dB to +9 dB for each audio input.
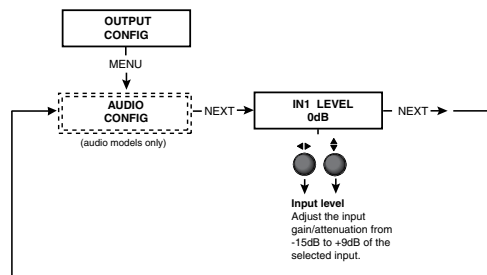
Figure 2-14 — Audio configuration menu

Volume control is available through SIS commands or IR remote control.

Memory preset

The memory preset feature saves the current values for image parameters such as color, tint, contrast, brightness, detail, aspect ratio, horizontal start, vertical start, horizontal active, vertical active, phase, total pixels, horizontal position, vertical position, horizontal size, vertical size and zoom.

The following flowchart provides an overview of the Memory Preset submenus and the options for each setting.
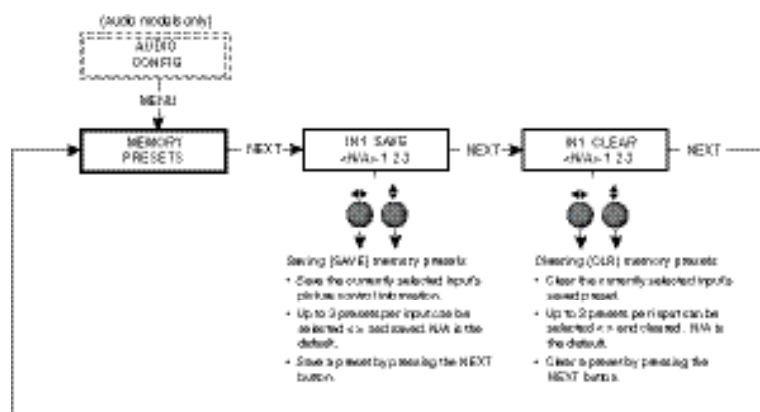
Figure 2-15 — Memory present menu

NOTE   *The presets will only save the sizing, centering, and picture control information.*

Save memory preset

From this submenu, the picture control information for the currently selected input can be saved to memory. Up to three memory presets can be saved per input.

1.   Using either the Adjust horizontal **(◄►)** or Adjust vertical **(♦)** knob, select (< >) either N/A, 1, 2, or 3 to select a preset. The default is <N/A>.

2.   To save the preset, press the Next button.

NOTE   *The presets are saved in nonvolatile memory, so powering down the DVS 304 will not lose the presets. Saving a preset by pressing the Next button will also advance to the next submenu (Clear memory preset).*

To exit the Save memory preset function without saving a preset, press Menu.

Clear (CLR) memory preset

From this submenu, up to three saved presets for the currently selected input can be cleared from memory.

1. Using either the Adjust horizontal (◄►) or Adjust vertical (♦) knob, select (< >) either N/A, 1, 2, or 3 to select a preset. The default is <N/A>.

2. To clear the preset, press the Next button.

NOTE *Clearing a preset by pressing the Next button will also cause a return to the Memory Preset menu.*

To exit the Clear memory preset function without clearing a preset, press Menu.

Recalling a preset

Recalling a saved preset requires that the desired input be currently selected and that the input button be pressed successively to activate each saved preset (up to three). Each saved preset will display the message "Input #X Memory Y", where "X" refers to the input (1 to 4) and "Y" refers to the preset (1 to 3).

In the absence of any saved presets, the "Input #X Memory Y" message will not be displayed for those presets.

NOTE *The presets are specific to a selected output rate. If the output rate is subsequently changed, the previously saved preset will have no effect on the video output. However, if the original output rate is later restored for a saved preset, the preset will re-apply to that output rate.*

Input preset

Input preset saves current values for parameters such as input type, color, tint, contrast, brightness, detail, aspect ratio, horizontal start, vertical start, horizontal active, vertical active, phase, total pixels, horizontal position, vertical position, horizontal size, vertical size, zoom, and OSD text.

IP configuration

The IP Configuration menu displays the IP address of the unit, the Subnet mask, and Gateway IP address.
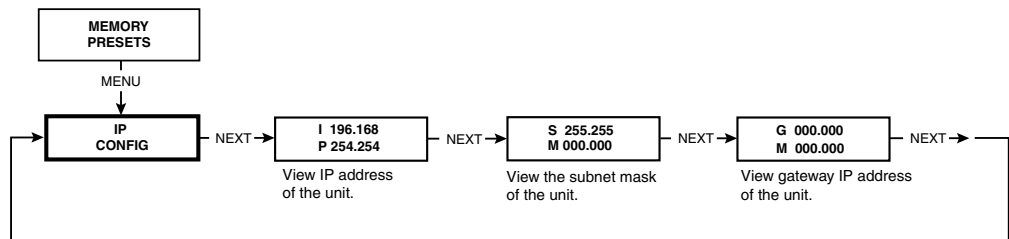
Figure 2-16— IP Configuration menu

To change an IP address, do the following:

1. Press and hold the Input 4 and Next buttons simultaneously for 2 seconds. This introduces the Setup mode.

2. Change the flashing octet selection by using the Adjust vertical (♦) knob. Change the selection numbers by using Adjust horizontal (◄►) knob.

3. Press the Menu button to return to the IP address setup and the Next button to select another address setup.

4. Press the Menu button to save and exit.

The IP configuration menu "times out" if there is no activity for over 10 seconds.

Advanced configuration

The following flowchart provides an overview of the Advanced Configuration submenus and the options for each setting.

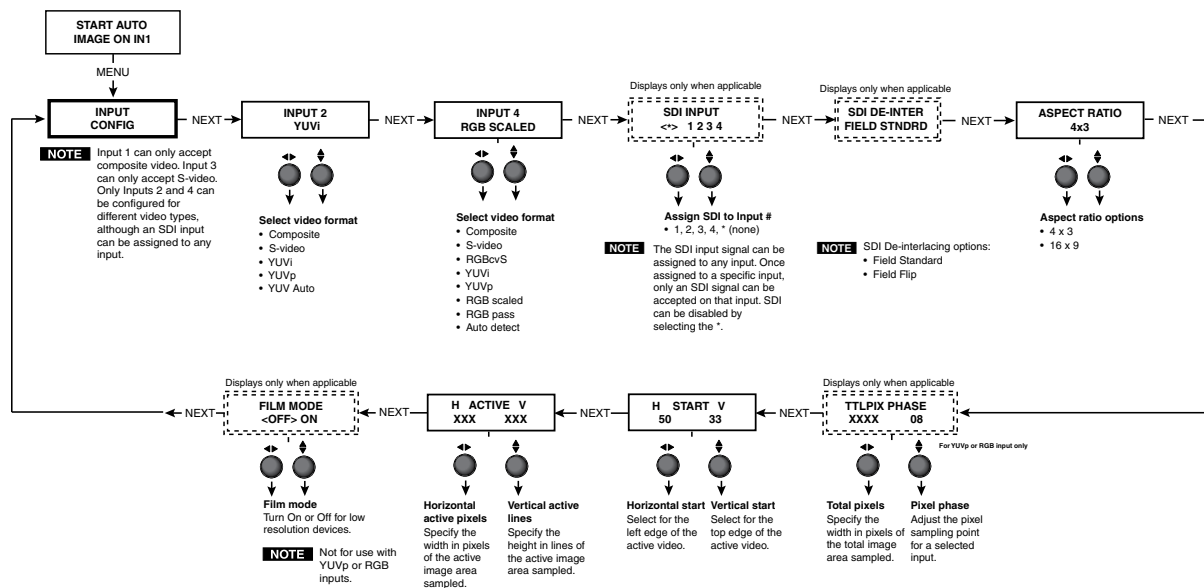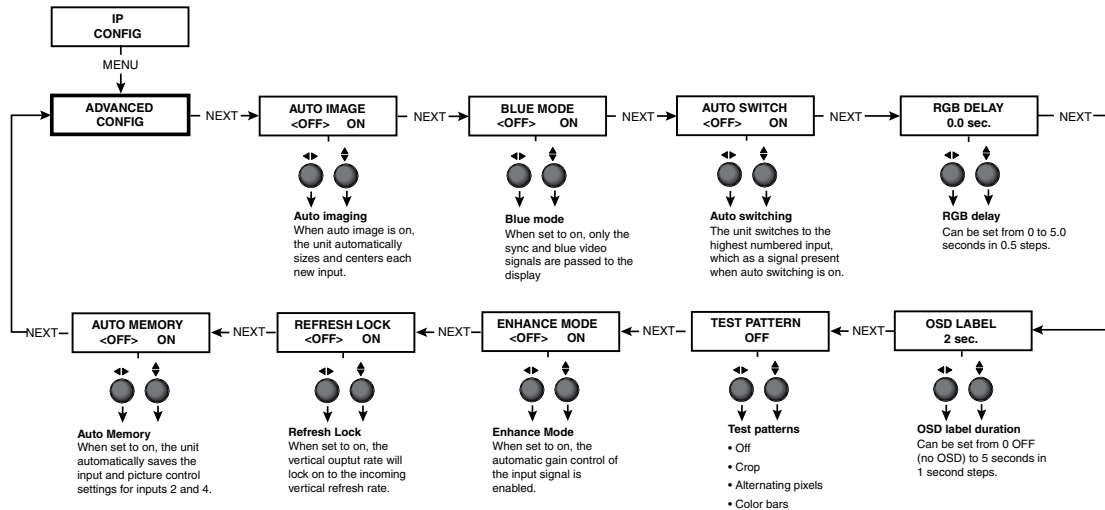*Figure 2-17— Advanced Configuration menu*

Auto Image

When enabled and a new input frequency is detected, the DVS will first apply an existing Auto Memory for the signal (if Auto Memory is enabled), or if no entry exists, will perform an automatic Auto Image on the new signal.

With Auto Image disabled, the DVS 304 will apply default values to a new input if no Auto Memory exists (if Auto Memory is enabled). Default is off.

Please see the table in the Auto Memory section for a full description of the interaction between the Auto Image and Auto Memory settings.

NOTE *An input with a vertical refresh rate less than 40 Hz must be manually centered and sized, using H/V Start and H/V Active under the Input Config menu. When a rate with a low vertical refresh rate (e.g. 720p 29.9 Hz) is applied and an Auto Image command is issued, the DVS 304 will refer to default values instead of performing a true Auto Image.*

Blue mode

The Blue mode assists the user in setting up a scaler's color and tint level. To use this feature, set this submenu to "On" so that only sync and blue video signals will be passed to the display.

Use either the Adjust horizontal (◄►) or Adjust vertical (♦) knob to select this mode. The default state is "Off".

NOTE *The Blue mode is not effective for RGB pass-through.*

Auto switch mode

The Auto switch mode causes the highest numbered input having a signal present, to be automatically selected. For example, if both inputs 1 and 3 have active input signals, input 3 will be selected.

From this submenu, use either the Adjust horizontal (◄►) or Adjust vertical (♦) knob to specify this mode as "On" or "Off". The default is "Off".

NOTE *The Auto switch mode ignores the presence of an SDI input signal, so any input which is assigned an active SDI signal will not be selected.*

RGB Delay

The RGB delay feature applies a brief delay before displaying a new picture to a screen and allows the display device to adjust to the new sync timing. This feature provides "no-glitch" switching.

The blanking period can be set from 0 to 5 seconds in 0.5 second steps.

OSD label

Use the On-Screen Display (OSD) label menu to determine the time allotment for an input label or a user defined OSD label. Input labels are generic labels shown for inputs 1, 2 and 3. For input 4, the user can create a custom OSD label to display. The OSD labels are displayed (white box, black text) in the top left-hand corner. The OSD label can be turned off by setting its duration to "Off" from the Advanced Configuration menu. For OSD text, note the following:

- Line 1 displays the input number.   • Line 2 displays the input type.

- Line 3 displays a text label that you can define (input 4 only).

The display time can be set from 0 to 5 seconds in 1 second steps (default is 2 secs).

Test pattern

Test patterns are useful when the DVS 304 is used to output differing resolutions. Choose a test pattern to properly adjust the image using built in crop, alternating pixels, and color bars.

Enhance mode

When the enhance mode is set to on, automatic gain control of the video input signal is enabled. If the input signal level is too weak, signal gain will be increased, and if the input signal level is excessive, signal gain will be decreased.

Using either the Adjust horizontal (◄►) or Adjust vertical (♦) knob, select (< >) either On or Off as desired. The default is Off.

Refresh Lock

When Refresh Lock is applied the vertical output rate is locked to the incoming vertical refresh rate to prevent tearing and/or stutters associated with frame conversion. This mode should only be activated when excessive stuttering and/or tearing is being experienced with an input signal.

NOTE *The output refresh rate must be set equal to or greater than the incoming video's refresh rate or no video output will be displayed.*

If the incoming video's vertical rate differs significantly from the set output refresh rate, no video will be displayed.

Auto Memory

The DVS 304 stores 16 auto memories with input and picture control data for inputs 2 ad 4. The default settings enables these memories to automatically recall input and picture controls for signals that have been previously applied. By disabling auto memories, the DVS 304 will treat every newly applied input as a new input. Default is on.

AUTO MEMORY AND AUTO IMAGE FEATURES		
Auto Memory	Auto Image	Information
ON	ON	"New" signals /rates that have not been previously detected by the DVS 304 are initially set-up using default parameters, then auto image is automatically applied and values stored. The next time the same signal is detected, the values stored in the auto memory location are applied.
ON	OFF (Default)	"New" signals /rates that have not been previously detected by the DVS 304 are set-up using default parameters. If manual input and/or picture settings are made to the input, an auto memory location is created and recalled each successive time the input is detected.
OFF	ON	Each change in input sync triggers an automatic auto image. When auto memory is disabled, each different signal is treated as a new signal and default picture controls and automatic auto image is applied. Any manual changes made to the image and picture controls are lost each time a new rate is detected.
OFF	OFF	Each change in input sync causes default values to be applied to the rate. Any manual changes made to the image and picture controls are lost each time a new rate is applied.

Picture-in-picture mode

The DVS 304 can display two image sources on the screen simultaneously. Keep in mind that when using the PIP feature, one image source must be low-resolution (composite, S-video, YUVi and RGBcvS) video, while the other must be high resolution (YUVp, RGB scaled) video. If these conditions are not met (i.e., two low resolution video inputs or two high resolution inputs are selected), the PIP mode will quit.

To go into Picture-in-picture mode, do the following:

1. Select an input for the main window.

2. Define the size of the main window before starting PIP mode.

NOTE *For quick sizing setup, use the 16*# X105 SIS command to set different sizes for the PIP window.*

3. Activate the PIP mode via an SIS command or IR remote; specify the PIP window input.

DVS 304 checks the input format for the PIP window and returns an error message if an invalid selection is made.

When the PIP mode is active, note the following:

•   The LED for the main window input is ON.

•   The parameters of the PIP window are adjustable from the front panel or by SIS commands only.

•   Any change in configuration (except positioning) of the PIP window is saved to that input even after the PIP mode is not longer active.

•   The PIP window input is listed under the default cycle on front panel menu, as shown below.
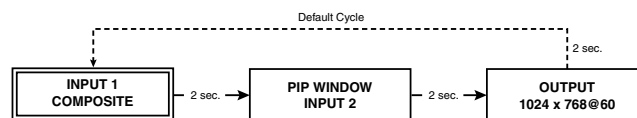
Figure 2-18 — The PIP sequence

If the PIP window source is out, the PIP mode exits until an active signal is detected. When the main window source is removed, a black background displayed.

Changing the input

To change the input for the PIP and/or main window, determine if the corresponding input is a low or high resolution.

If your main window image is from a low resolution source, switch to another low resolution input from the front panel. In this case, the PIP window retains its high resolution.

When the PIP window is active, size, position, and picture controls all apply to the PIP window. The main window settings cannot be modified while the PIP window is active. The PIP size and position can be adjusted with the same front panel controls or SIS commands used to adjust the main image.

Using the swap feature

Use the swap feature to switch the active main window input with the current PIP input. For example if the main window is Input 4 (RGB scaled) and the PIP window is Input 1 (composite), applying the swap command results in Input 1 becoming the main window and Input 4 the PIP window.

For audio models (DVS 304 A or AD), you can allow audio to follow the main (default) or PIP window. Audio breakaway is not possible while PIP mode is on; audio must follow either the main window or the PIP window.

Exit menu

From this submenu, press the Menu button to return to the Start Auto Image menu cycle, or press the Next button to return to the default sequence.
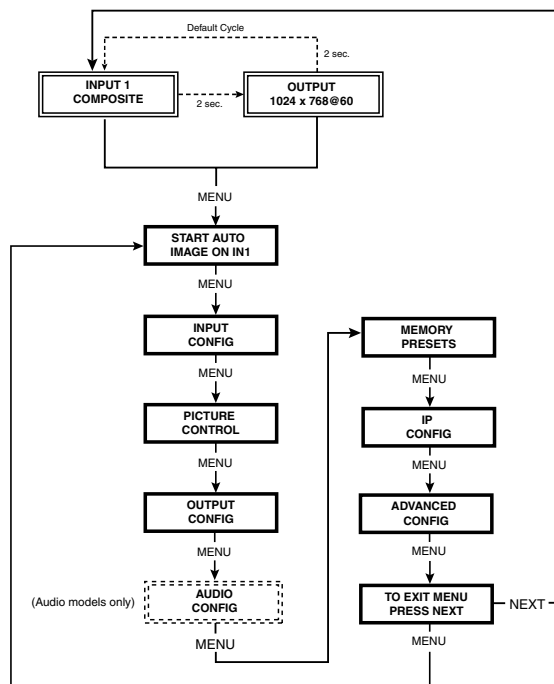
Figure 2-19 — Exit menu

Resetting an Input

Each input of the DVS 304 scaler can have their parameters reset to default values by holding down the specific input button together with menu button, until the input number and RESET message is displayed on the LCD screen.

Installation and Operation, cont'd

Resetting the Unit

There are four reset modes (numbered 1, 3, 4, and 5) that are available by pressing the Reset button on the rear panel. The Reset button is recessed, so use a pointed stylus, ballpoint pen, or Extron Tweeker to access it. See the following table for a summary of the reset modes.

Reset Mode Comparison/Summary			
Mode	**Activation**	**Result**	**Purpose/Notes**
1	Hold down the recessed Reset button while applying power to the unit.	**Mode 1 causes the DVS 304 to revert to the factory default firmware.** Event scripting does not start if the unit is powered on in this mode. All user files and settings (drivers, audio adjustments, IP settings, etc.) are maintained.	Use mode 1 to remove a version of firmware if incompatibility issues arise.
3	Hold down the Reset button for about 3 seconds, until the Reset LED blinks once. Then, within 1 second, press Reset again briefly (for less than 1 second).	**Mode 3 turns events on or off.** During resetting, the Reset LED flashes 2 times if events are starting; 3 times if events are stopping.	Events must be turned on if you want to change IP settings or scheduling.
4	Hold down the Reset button for about 6 seconds, until the Reset LED has blinked twice (once at 3 seconds, once at 6 seconds). Then, within 1 second, press Reset briefly (for less than 1 second).	**Mode 4 does the following:** • Enables ARP capability. • Sets the IP address back to factory default. • Sets the subnet back to factory default. • Sets the default gateway address back to the factory default. • Sets port mapping back to factory default. • Turns DHCP off. • Turns all events off. The Reset LED flashes 4 times in quick succession during reset.	Mode 4 enables you to set IP address information using ARP and the MAC address.
5	Hold down the Reset button for about 9 seconds, until the Reset LED has blinked three times (once at 3 seconds, once at 6 sec., once at 9 seconds). Then, within 1 second, press Reset briefly (for less than 1 second).	**Mode 5 performs a complete reset to factory defaults (except the firmware).** • Does everything mode 4 does. • Resets everything that was set via the Real Time Admustments part of the control program: all video settings and miscellaneous options. • Resets all IP options. • Removes/clears all files from the processor. The Reset LED flashes 4 times in quick succession during the reset.	Mode 5 is useful if you want to start over with control software configuration and uploading, and to replace events.

Figure 2-20 — Reset mode comparison

CAUTION *Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.*

NOTE *The reset modes listed in the table close all open IP and Telnet connections and close all sockets. Also, each mode is a separate function, not a continuation from mode 1 to mode 5.*

System Reset

For a scaler reset, the DVS 304 can return to default values by holding down the Input 1 button while simultaneously plugging in the power cord. The System Reset message will be displayed on the LCD screen.

Front Panel Lockout (Executive mode)

To prevent accidental changes to settings, press the Menu and Next buttons simultaneously for 2 seconds to enable the DVS 304's front panel lockout mode, also known as executive mode.

Executive mode locks all front panel functions except input switching and preset recall. The menu system returns to the default menu within 10 seconds. The DVS 304's front panel is affected by executive mode, but the IR 902 remote is not. See "IR 902 Infrared Remote Control" later in this chapter for information.

When executive mode is active, all functions and adjustments can still be made through RS-232 control. For details on RS-232 control, see chapter 3, "Serial Communication".

To disable the executive mode, press the Menu and Next buttons simultaneously for 2 seconds. See the flowchart below.
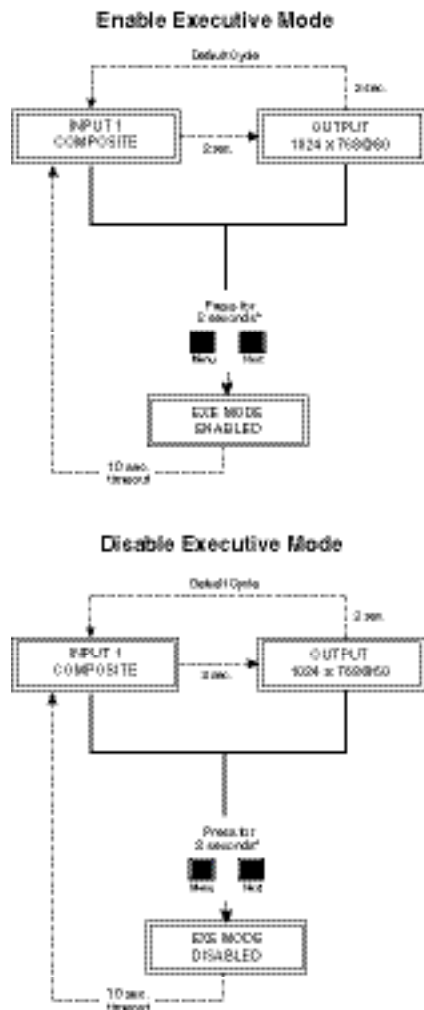
Figure 2-21 — Front Panel Lockout

Installation and Operation, cont'd

IR 902 Infrared Remote Control

The IR 902, shown at right, replicates most of the front panel controls except the Menu and Next buttons. See chapter 3, "Serial Communication", for details.

The topmost part of the IR 902 features memory preset buttons, input switching, picture-in-picture (PIP), volume, and four input selection buttons (1, 2, 3, 4).

The middle portion of the IR 902 features muting, freeze control, auto imaging, the on-screen display (OSD) on/off button, and basic navigation.

The bottom portion contains the adjustment controls for size, position, brightness, contrast, zoom, pan, color, tint, detail, phase adjustment and aspect ratio.

The approximate range for the IR 902 is 30 feet.
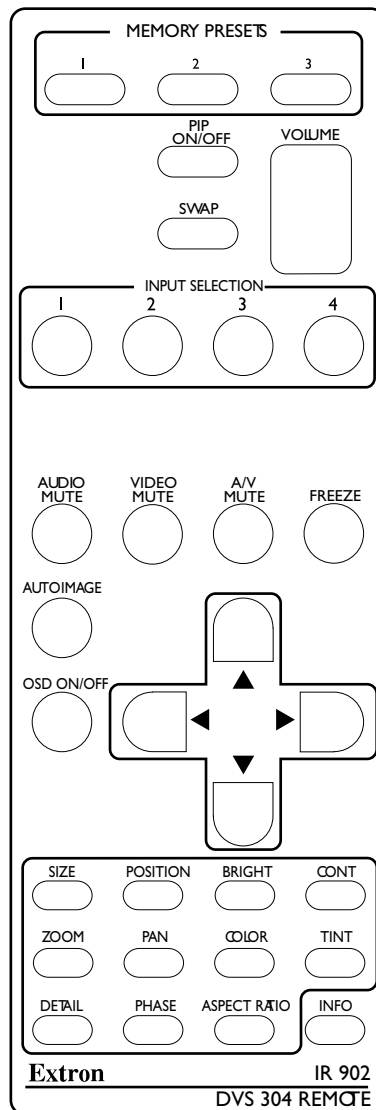
Figure 2-22 — The IR 902 remote control

Setting up the DVS to work with a Matrix switcher

The Sync to Matrix tool is a powerful tool which can simplify the control system necessary when using an Extron Matrix switcher and a DVS 304.

The "Sync to Matrix" script can sense when a new tie is made on the matrix is routed to the DVS and automatically recalls the input preset associated with the input on the matrix switcher. The input preset recalls all the settings for the input including the signal format, input sampling settings, and picture controls.
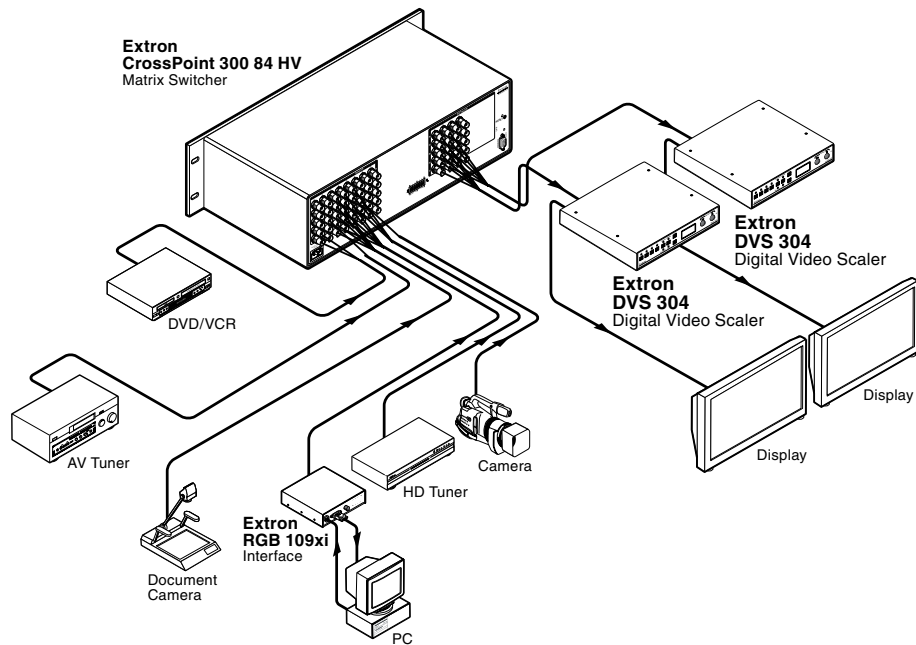
Figure 2-23 — DVS 304 devices connected to a Matrix switcher

To configure the input presets required using the Sync to Matrix tool, do the following:

1.   Install and connect the DVS as described in the Quick Start Guide, with the exception of step 3. In place of this step, connect the DVS 304's input #4 to one of the matrix switchers outputs.

   NOTE   *Multiple DVS 304's can be connected to a single matrix switcher.*

2.   On the matrix switcher, tie input 1 to the output connected to input 4 on the DVS (see figure 2-24). Refer to the matrix switchers users manual for method.
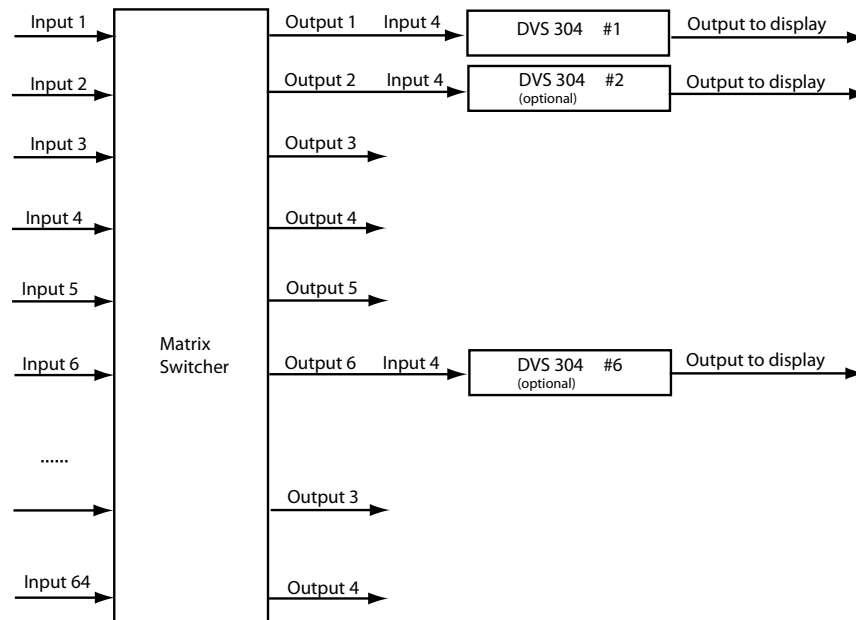
Figure 2-24 — Multiple DVS 304's connected to a Matrix switcher

3.   On the DVS 304, configure the input as follows:

    a).   Switch to input 4 on the DVS.

    b).   Set the following input sampling settings as desired: signal type, horizontal and vertical start, pixel phase, total pixels, active pixels, and active lines

NOTE   *Do not use auto detect setting for the input type when using input presets.*

    c).   Set the following picture controls as desired: size, position, color, tint, brightness, contrast, and detail.

    d).   Save the adjusted settings as input preset 1. Refer to chapter 3, "Serial Communication", for the SIS commands to save the preset.

NOTE   *Each input preset must be saved with the same number as the input on the matrix switcher. For Example, input 24 on the matrix will be associated with the input preset 24 on the DVS.*

    e).   Repeat steps 2 and 3 for each input on the matrix that is to be used on the DVS 304.

4.   Synchronize the DVS to the matrix switcher as follows:

    a).   Open the Signal Enhancements Windows Control Program and connect to the DVS 304.

NOTE   *Connection must be via IP (not RS-232).*

    b).   From the Tools menu, select **Sync DVS304 to Matrix Switcher...** . The Sync DVS304 to Matrix Switcher window opens.

    c).   In the IP Address field, enter the matrix switcher's IP address.

    d).   Click **Connect to Matrix** button. The matrix switcher's size is displayed below the button.

    e).   From the drop-down menu next to **Matrix Output feeding DVS 304 Input 4:** select the matrix output number that is connected to Input 4 on the DVS 304.
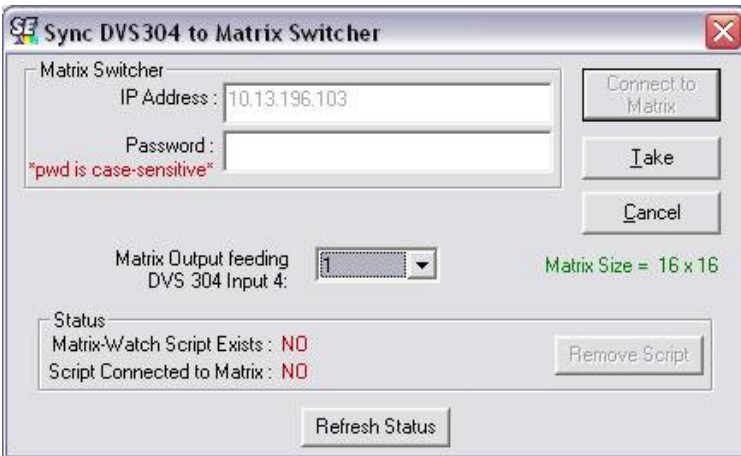
f). Click **Take** button to tie the DVS 304's input to the selected switcher output. The program will create a custom script that will then be loaded onto the DVS 304. The **Status** box updates with the status of the script on the DVS 304, showing if the DVS 304's script is connected to the matrix switcher, and showing the current tie associated with output selected.
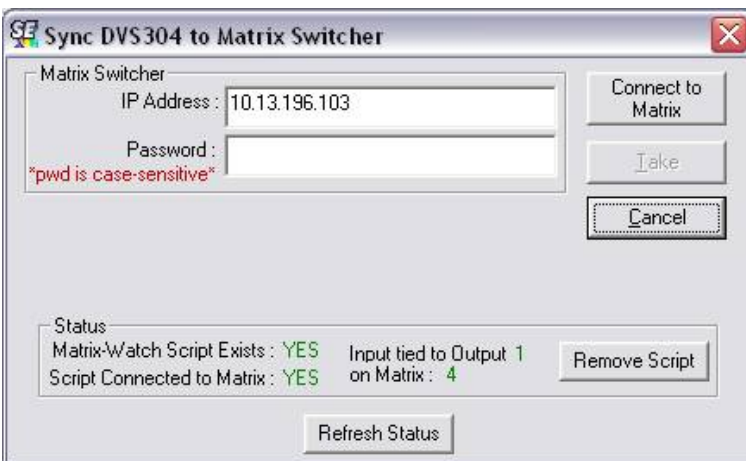
Using the DVS and matrix switcher after the DVS is synchronized to the matrix switcher.

After completing step 4, above, ensure the following is done when using the DVS with the matrix:

- Perform all input switching using the matrix switcher. A 1-second RGB delay on the matrix is recommended to minimize the appearance of a glitch in the output while the DVS locks onto the new signal.

- The DVS senses when the matrix switcher changes input ties and recalls the matching input preset, so Input presets need not be recalled manually.

- The DVS 304 and the matrix switcher must remain on the same subnet. Do not change the matrix switcher's IP address. If the IP address of the matrix is altered, repeat step 4 above.

Installation and Operation, cont'd

Removing the Sync to Matrix Script

If the Sync to Matrix feature is no longer being used, the script can be removed from the DVS by the following steps:

1. Open the Signal Enhancements Windows Control program and connect to the DVS via IP (not RS-232).

2. Under the Tools menu, select **Sync DVS 304 to Matrix Switcher...** . The Sync DVS 304 to Matrix Switcher window opens.

3. Click **Remove Script**.

Minimize synchronization problems without using the Sync to Matrix feature

This section describes how to manually implement the equivalent of the Sync to Matrix feature without using a script loaded on the DVS 304, and instead relying on a control system.

When operating the system using a manually configured control system (for which Sync to matrix has not been setup), you can avoid synchronization problems that cause unwanted image blanking or scrambling during input switches by doing the following.

NOTE *If the Sync to Matrix feature has been previously used, first see* Removing the Sync to Matrix Script *section above.*

1. While setting up the switcher and the DVS to work together, set rthe RGB delay on the matrix switcher, equal to, or greater than 1.0 second.

2. Create a tie on the matrix switcher from desired input X to the output number that corresponds to the DVS 304's Input 4.

3. Immediately (within 1 second) recall the input preset on the DVS 304 associated with the input X on the matrix switcher.

NOTE *Input presets cannot be recalled via the DVS 304's front panel. You can recall them via SIS commands (see chapter 3, "Serial Communication").*

3

Chapter Three

Serial Communication

SIS™ Programmer's Guide

Control Software for Windows®

Serial Communication

The DVS 304 can be remotely controlled via a host computer or other device (such as a control system) attached to the rear panel RS-232 connector or the LAN port. The control device (host) can use either Extron's Simple Instruction Set (SIS™) commands or the graphical control program for Windows.

The scaler uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control.

The rear panel RS-232 9-pin D connector has the following pin assignments:

Pin	RS-232 function	Description
1	Input #1	Contact closure
2	Tx	Transmit data
3	Rx	Receive data
4	Input #2	Contact closure
5	Gnd	Signal ground
6	Input #3	Contact closure
7	Input #4	Contact closure
8	–	No connection
9	–	Reserved

DB9 Pin Locations
Female
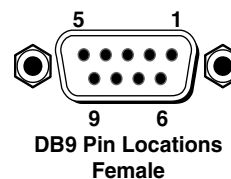
SIS™ Programmer's Guide

Host to-scaler and scaler to host communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the DVS 304 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the scaler to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Scaler-initiated messages

When a local event such as a front panel selection or adjustment takes place, the DVS 304 scaler responds by sending a message to the host. No response is required from the host. The scaler-initiated messages are listed here.

(C) Copyright 2008, Extron Electronics, DVS 304 series, Vx.xx ↵
The DVS 304 sends the copyright message when it first powers on. Vx.xx is the firmware version number.

In X1 All ↵
Reconfig ↵ (where X1 is the input number). The DVS 304 sends this response when an input is switched.

Using the command/response tables

The following are either Telnet (port 23) or Web browser (port 80) commands. There are some minor differences when you are implementing these commands via Telnet or via URL encoding using a Web browser. All commands listed below will work using either connection method but, due to some limitations of the Web browser, the encapsulation characters are modified to make sure that the Web browser will properly handle them. All examples in the command/response table show the proper implementation in a Telnet or Web browser session.

NOTE *Note for Web browsers: all non-alphanumeric characters must be represented as their hex equivalent, such as %xx where xx equals the two character representation of the hex byte that needs to be sent (e.g., a comma would be represented as %2C).*

	Telnet	Web Browser
	Escape (Hex 1B)	W [must **not** be encoded]
	Carriage Return (Hex 0D)	Pipe Character (|) [must **not** be encoded]

When SIS commands are used through a Web browser, the URL reference is used below to shorten the examples. This would in practice be the full URL of the control interface and Web page reference including all path information.

(e.g., http://192.168.254.254/index.html)

To send any of the commands using a Web browser you need to prefix them with the full URL followed by **?cmd=**. See *URL Encoding* later in this chapter.

NOTE   *With Telnet you can use either the Escape commands or the W commands, and the carriage return or the pipe (\|) character. With the Web browser you are required to use the W commands and the pipe character.*

In either method {Data} = Data is directed to a specified port and **must** be encoded if non-alphanumeric.

The *Command/response table for Simple Instruction Set (SIS) commands* later in this chapter lists the commands that the DVS 304 scaler recognizes as valid, the responses that are returned to the host, a description of the command's function or the results of executing the command, and an example of each command in ASCII (Telnet) and URL Encoded (Web).

NOTE   *Upper and lower case text can be used interchangeably except where noted.*

ASCII to HEX Conversion Table								Esc 1B	CR 0D	LF 0A
20	! 21	" 22	# 23	$ 24	% 25	& 26	' 27
(28	) 29	* 2A	+ 2B	, 2C	- 2D	. 2E	/ 2F
0 30	1 31	2 32	3 33	4 34	5 35	6 36	7 37
8 38	9 39	: 3A	; 3B	< 3C	= 3D	> 3E	? 3F
@ 40	A 41	B 42	C 43	D 44	E 45	F 46	G 47
H 48	I 49	J 4A	K 4B	L 4C	M 4D	N 4E	O 4F
P 50	Q 51	R 52	S 53	T 54	U 55	V 56	W 57
X 58	Y 59	Z 5A	[5B	\ 5C	] 5D	^ 5E	_ 5F
` 60	a 61	b 62	c 63	d 64	e 65	f 66	g 67
h 68	i 69	j 6A	k 6B	l 6C	m 6D	n 6E	o 6F
p 70	q 71	r 72	s 73	t 74	u 75	v 76	w 77
x 78	y 79	z 7A	{ 7B	| 7C	} 7D	~ 7E	DEL 7F

ASCII to hexadecimal character conversion table

Copyright information

↵ © Copyright 2008, Extron Electronics, DVS 304 series, Vx.xx
Thur, 18 Feb 2008 11:27:33 ↵
The copyright message is displayed upon connecting to IP Link product via TCP/IP or Telnet. Vx.xx is the firmware version number. The current date and time are displayed. This is followed by a Password prompt.

Password information

The ↵ Password: prompt requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If correct password is entered, the unit responds with ↵ Login Administrator ↵ or ↵ Login User ↵, depending on password entered. If passwords are the same for both administrator and user, the unit defaults to administrator privileges.

Serial Communication, cont'd

Error responses

When the DVS 304 receives a valid command, it executes the command and sends a response to the host device. If the unit is unable to execute the command because the command contains invalid parameters, it returns an error response to the host.

- E01 — Invalid input number
- E10 — Invalid command
- E11 — Invalid preset number
- E12 — Invalid port number
- E13 — Invalid parameter
- E14 — Not valid for this configuration
- E17 — Invalid command for signal type
- E22 — Busy
- E24 — Privilege violation
- E25 — Device not present
- E26 — Maximum number of connections exceeded
- E27 — Invalid Event number
- E28 — Bad Filename/File not found

References to errors (at command descriptions on the following pages)

[14] = Commands that give E14 (Invalid Command for this configuration) if sent to Extron product whose current configuration does not support the command.

[24] = Commands that give E24 (Privilege violation) if not administrator level

[27] = Commands that may give E27 (Invalid Event number)

[28] = Commands that may give E28 (File not found)

Symbol definitions

• = Space

↵ = Carriage return with line feed

← = Carriage return with no line feed

Esc = Escape

[14, 24, 27, 28] = Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters. See "Error responses", earlier in this chapter.

X1 = Specific port number (01-99)

X2 = Command data section

NOTE *For Web encoding only:*
Data is directed to the specified port and must be encoded if it is non-alphanumeric. Because data can include either command terminator, it must be encoded as follows when used within the data section:
Space (Hex 20) must be encoded as %20 (Hex 25 32 30)
Plus sign (Hex 2B) must be encoded as %2B (Hex 25 32 42).

X3 = Greenwich Mean Time (GMT) offset value (-12:00 to 14:00) in hours and minutes (hh:mm)

X5 = On/Off
0 = off/disable
1 = on/enable

X11 = Version number (listed to 2 decimal places)

X12 = Name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must <u>not</u> be a minus. No blank or space characters are permitted, and no distinction is made between upper- and lowercase.

X13 = Local date and time format
Set format (MM/DD/YY-HH:MM:SS); e.g., 06/21/02-10:54:00
Read format (day of week, date month year (HH:MM:SS), e.g., Thu, 20 Feb 2003 18:19:33

X14 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.

X15 = Mail domain name (e.g., Extron.com)

X17 = Time in tens of milliseconds to wait for characters coming into a serial port before terminating the connection (min = 0, max = 32767, and default = 10 = 100 ms). The response is returned with leading zeros. In RS-232 commands, X17 is optional.

X18 = Hardware (MAC) address (xx-xx-xx-xx-xxxx)

X19 = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and are suppressed in returned values.

X21 = Parameter to set either the **L**ength of the message to receive or a **D**elimiter value.
L = byte count (min = 0, max = 32767, and default = 0**L** [0 byte count).
D = decimal value for the ASCII character (min = 0, max = 00255, and default = 00000**D**).
Value is placed prior to parameter; for example, 3 byte length = 3**L**, and the ASCII 0A delimiter is 10**D**. This parameter is case sensitive; you must use uppercase D and L. The response is returned with leading zeros. (X21 is an optional parameter.)

X22 = Verbose/Response Mode
(Default = 0 for Telnet connections; 1 for RS-232 host control).
0 = clear/none
1 = verbose mode
2 = tagged responses for queries
3 = verbose mode and tagged responses for queries

NOTE *If tagged responses is enabled, all read commands will return the constant string + the data, like setting the value does*
(e.g. command: Esc CN ← response: Ipn• x12↵).

X33 = Password (12 characters = maximum length; no special characters are allowed.)

NOTE *A user password cannot be assigned if no administrator password exists; the E14 error code is returned. If the administrator password is cleared, the user password is also removed.*

X34 = Daylight savings time (used in the northern hemisphere [USA] and parts of Europe and Brazil)
0 = off/ignore
1 = on
2 = Europe
3 = Brazil

X35 = Event number, range: 0 - 99

X36 = Event buffer:
0 = receive
1 = unified
2 = data
3 = NVRAM

Serial Communication, cont'd

X37 = Event buffer offset
    (range: 0 to MaxBufferSize)

X38 = Event data size
    b = bit
    B = byte (8 bits)
    S = short (16 bits)
    L = long (32 bits)

NOTE *This parameter is case sensitive.*

X39 = Event data to write

X41 = Reading Password:
    RS-232 connections responds with
    password. IP connections responds with 4
    asterisk (****) if password exists and empty
    if not, instead of actual password.

X44 = Number of bytes to read
    (range: 1-24 max)

X45 = E-mail event number (1 - 64 max). The
    response is returned as 2-digits with
    leading zeros.

X46 = E-mail recipient's address

X47 = Name of e-mail file to be sent
    First line of the file is the subject. The rest
    is the body of the e-mail.

NOTE *The SM command will send a default*
e-mail message if file X47 is not found.

X48 = Event status fields
    event_type
    event_state
    event_paused
    error_status
    RcvBuff_startptr
    RcvBuff_endptr
    DataBuffA_startptr
    DataBuffA_endptr
    DataBuffB_startptr
    DataBuffB_startptr

X49 = Default name: a combination of the model
    name and the last 3 character pairs of the
    unit's MAC address (e.g., DVS-304-00-023D)

X51 = Extended-security (Password) levels:
    1 – 10. The response is returned as 2
    digits with a leading zero.

X52 = Connection's security level:
    0 = anonymous
    1 – 10=extended security levels 1 thru 10
    11 = user
    12 = administrator

X54 = ASCII digit(s) representing the numeric
    value of the data element read from the
    event buffer (leading zeros are suppressed).

X64 = Broadcast repetition rate in seconds
    (0 – 255 max; default = 0 = clear)
    The response is returned with leading zeros.
    1 – 11 = entry without password goes to
    the level specified (if an admin password
    exists). The response as returned a 2-digits
    with a leading zero.

X69 = The number of seconds before timeout
    on the IP connection:
    (min = 1; max = 65000; default =
    30 = 300 seconds). If no data is received
    during the timeout period, the Ethernet
    connection will be closed. Each step =
    10 seconds. Applicable only when
    connected via Ethernet. When connected
    via RS-232 only the global timeout
    commands apply (current returns E13).
    The response is returned with leading
    zeros.

X70 = Number (as optional parameter) that
    will get inserted into email message if
    .eml file has an embedded server-side
    include "<!--#echo var="WCR|" -->"
    (ESC CR command with no params).
    Use 0 as placeholder if optional X47 is
    used but X70 isn't needed.

X71 = Input selection: 1 to 4

X72 = Input selection: 2 or 4

X73 = Input Video Format:
    1 = Composite
    2 = S-video
    3 = RGBcvS
    4 = YUVi
    5 = YUVp
    6 = RGB scaled
    7 = RGB pass through
    8 = Auto detect/YUV Auto
    9 = SDI

X74 = H Start: 0 to 127 for video inputs;
    0 to 255 for RGB and YUVp inputs.

X75 = V Start: 0 to 93 for video inputs; 0 to 255
    for RGB and YUVp inputs.

X76 = Pixel phase: 1 to 31

X77 = Total pixel (+/- 255 of the default value)

X78 = Active pixel (+/- 100 of the default value
    for video and +/- 127 for RGB)

X79 = Active line (+/- 127 of the default value)

X80 = 0 or 1

X81 = Input Standard:
    0 = None
    1 = NTSC 3.58
    2 = PAL
    3 = NTSC 4.43
    4 = SECAM

X82 = internal temperature (in degree Celsius)

X84 = Text label / Preset name:
    Up to 16 characters

X85 = Picture adjustment: 0 to 127

X86 = H and V position (values depend on
    current output rate)

X87 = H and V size (values depend on current
    output rate)

X88 = Zoom (100 to 200%)

X89 = Pan (values depend on current output
    rate and zoom %)

X90 = Test pattern: 0 to 2
X91 = Output resolution:
    1 = 640 x 480
    2 = 800 x 600
    3 = 852 x 480
    4 = 1024 x 768
    5 = 1024 x 852
    6 = 1024 x 1024
    7 = 1280 x 768
    8 = 1280 x 1024
    9 = 1360 x 765
    10 = 1365 x 768
    11 = 1365 x 1024
    12 = 1366 x 768
    13 = 1400 x 1050
    14 = 1600 x 1200
    15 = 480p
    16 = 576p
    17 = 720p
    18 = 1080i
    19 = 1080p
    20 = 1440 x 900
    21 = 1680 x 1050
    22 = 1280 x 800
X92 = Output refresh rate:
    1 = 50 Hz
    2 = 60 Hz
    3 = 72 Hz (75 Hz for 1440 x 900,
            24 Hz for 1080p)
    4 = 96 Hz
    5 = 100 Hz
    6 = 120 Hz
X93 = Output polarity:
    0 = H - / V -
    1 = H - / V +
    2 = H + / V -
    3 = H+ / V +
X94 = Output sync format:
    0 = RGBHV (default)
    1 = RGBS
    2 = RGsB
    3 = Y, R-Y, B-Y
X95 = Memory presets: 1 to 3
X96 = Input 4 presets: 1 to 128
X97 = Test pattern: 0 to 3
X98 = OSD display setup:
    0 to 5 seconds in 1 second steps.
X99 = Auto image: 0 to 2
X100 = PIP window input selection: 0 to 4
X101 = Audio level adjustment
    range: -15 to +9 dB
X102 = Audio gain adjustment
    range: 0 to 9 dB

X103 = Audio attenuation
    adjustment range: -15 to 0 dB
X104 = Volume range: 000 to 100
    (always returns 3 digits)
X105 = PIP window size:
    1 = 1/4
    2 = 1/9
    3 = 1/16
    4 = 1/25
    5 = Side by side Normal
    6 = Side by side Full screen
X106 = PIP audio setup:
    1 = Follow main window
    2 = Follow PIP window
    3 = Toggle audio source
X107 = RGB delay:
    0 to 10 (0 to 5 seconds in 0.5
    second steps).

Serial Communication, cont'd

Command/response table for SIS commands

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Input Selection			
Video and Audio	X71!	In X71• All↵	Select video and audio from input X71.
Video	X71&	In X71• RGB↵	Select video from input source X71.
Audio	X71$	In X71 • Aud↵	Select audio from input source X71
Input Video Type (Input 2 and input 4)			
Set Video Type	X72* X73 \	X72Typ X73 ↵	Sets input X72 to format X73.
View Video Type	X72 \	X73 ↵	View video type of input X72.
Select SDI input number (SDI model only)			
Set Video Type	X71 * 9 \	X71 Typ 9↵	Sets input X71 to SDI
View Video Type	X71 \	X73 ↵	View video type of input X71.
Horizontal Start			
Specify a value	X74)	Hst X74 ↵	Set horizontal location of first active pixel in active window.
Increment value	+)	Hst X74 ↵	Increment to a higher horizontal start position
Decrement value	−)	Hst X74 ↵	Decrement to a lower horizontal start position.
View	)	X74 ↵	Show horizontal location of first active pixel in active window.
Vertical Start			
Specify a value	X75 (	Vst X75 ↵	Set vertical location of first active line in active window
Increment value	+ (	Vst X75 ↵	Increment to a higher vertical start position.
Decrement value	− (	Vst X75 ↵	Decrement to a lower vertical start position.
View	(	X75 ↵	Show vertical location of first active line in active window.
Pixel Phase (Available only for RGB and YUVp input signals)			
Specify a value	X76 U	Phs X76 ↵	Adjust the pixel phase to specified value.
Increment value	+ U	Phs X76 ↵	Increase the pixel phase.
Decrement value	− U	Phs X76 ↵	Decrease the pixel phase.
View	U	X76 ↵	Show the pixel phase.
Total Pixels (Available only for RGB and YUVp input signals)			
Specify a value	11*X77#	TpxX77 ↵	Adjust the total pixels to specific value.
Increment value	+11 #	TpxX77 ↵	Increase the total pixels.
Decrement value	- 11 #	TpxX77 ↵	Decrease the total pixels.
View	11 #	X77 ↵	Show the total pixels.

NOTE
X71 = Input selection   1 to 4
X72 = Input selection   2 or 4
X73 = Input video format   1 to 9 (see page 3-6)
X74 = H start   0-127 for video, 0-255 for RGB and YUVp
X75 = V Start: 0 to 93 for video inputs; 0 to 255 for RGB and YUVp inputs.
X76 = Pixel phase: 1 to 31
X77 = Total pixel   +/- 255 of the default value

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Active Pixels			
Specify a value	12*[X78]#	Apx [X78] ↵	Adjust the active pixels to specified value.
Increment value	+12 #	Apx [X78] ↵	Increase the active pixels.
Decrement value	- 12 #	Apx [X78] ↵	Decrease the active pixels.
View	12 #	[X78] ↵	Show the active pixels.
Active Lines			
Specify a value	13*[X79]#	Aln [X79] ↵	Adjust the active lines to specified value.
Increment value	+13 #	Aln [X79] ↵	Increase the active lines.
Decrement value	- 13 #	Aln [X79] ↵	Decrease the active lines.
View	13 #	[X79] ↵	Show the active lines.
Film Mode (PAL 2:2 pull-down detection)			
Enable	18 * 1#	Flm 1↵	Enable Film Mode (auto senses for 3:2 or 2:2 pull down)
Disable	18 * 0#	Flm 0↵	Disables Film Mode (locks de-interlacer to 2:2 pull down).
View	18#	[X80] ↵	View the currently displayed film mode setting. (0= disabled, 1= enabled)
Input Aspect Ratio			
16:9	9 * 1#	Asp 1↵	Set input aspect ratio to 16:9.
4:3	9 * 0#	Asp 0↵	Set input aspect ratio to 4:3.
View	9#	[X80] ↵	View the current input aspect ratio. (0= 16:9, 1= 4:3)
Video mute			
Enable Blanking	1B	Vmt1↵	Blanks selected input.
Disable Blanking	0B	Vmt0↵	Displays selected input.
View	B	[X80] ↵	View the blanking status (0= disabled, 1= enabled).
Color			
Specific value	[X85] C	Col [X85] ↵	Sets color level to [X85].
Increment up	+C	Col [X85] ↵	Increments color level.
Increment down	– C	Col [X85] ↵	Decrements color level.
View	C	[X85] ↵	View current setting.
Tint (Available for NTSC composite and S-Video only)			
Specific value	[X85] T	Tin [X85] ↵	Sets tint level to [X85].
Increment up	+ T	Tin [X85] ↵	Increments tint level.
Increment down	– T	Tin [X85] ↵	Decrements tint level.
View	T	[X85] ↵	View current setting.

NOTE   [X78] = Active pixel   +/- 100 of the default value for video and +/- 127 for RGB
[X79] = Active line   +/- 127 of the default value
[X80] = 0 or 1
[X85] = Picture adjustment: 0 to 127

Serial Communication, cont'd

Command/response table for SIS commands (continued)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Contrast			
Specific value	X85 ^	Con X85 ↵	Sets contrast level to X85.
Increment up	+ ^	Con X85 ↵	Increments contrast level.
Increment down	– ^	Con X85 ↵	Decrements contrast level.
View	^	X85 ↵	View current setting.
Brightness			
Specific value	X85 Y	Brt X85 ↵	Sets brightness level to X85.
Increment up	+ Y	Brt X85 ↵	Increments brightness level.
Increment down	– Y	Brt X85 ↵	Decrements brightness level.
View	Y	X85 ↵	View current setting.
Detail Filter			
Set detail level	X85 D	Shp X85 ↵	Specify the detail level to X85.
Increment up	+ D	Shp X85 ↵	Increase the detail level.
Increment down	– D	Shp X85 ↵	Decrease the detail level.
View detail value	D	X85 ↵	Show the detail setting.
Horizontal Shift			
Specific value	X86 H	Hph X85 ↵	Set horizontal centering to X85.
Increment up	+ H	Hph X85 ↵	Shift window right.
Increment down	– H	Hph X85 ↵	Shift window left.
View	H	X85 ↵	Horizontal centering value is X85.
Vertical Shift			
Specific value	X86 /	Vph X86 ↵	Set vertical centering to X86.
Increment up	+ /	Vph X86 ↵	Shift window down.
Increment down	– /	Vph X86 ↵	Shift window up.
View	/	X86 ↵	Vertical centering value is X86.
Horizontal Size			
Specific value	X87 :	Hsz X87 ↵	Set horizontal sizing to X87.
Increase Size	+:	Hsz X87 ↵	Widen the window.
Decrease Size	–:	Hsz X87 ↵	Make the window narrower.
View	:	X87 ↵	Horizontal sizing value is X87.
Vertical Size			
Specific value	X87 ;	Vsz X87 ↵	Set vertical sizing to X87.
Increase Size	+;	Vsz X87 ↵	Make the window taller.
Decrease Size	–;	Vsz X87 ↵	Make the window shorter.
View	;	X87 ↵	Vertical sizing value is X87.

NOTE X85 = Picture adjustment: 0 to 127
X86 = H and V position   Values depend on current output rate
X87 = H and V size   Values depend on current output rate
X88 = Zoom   100 to 200%

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Zoom Mode			
Zoom in	+{	Zom X88 ↵	Zoom in, make the window larger.
Zoom out	–{	Zom X88 ↵	Zoom out, make the window smaller.
Set zoom value	X88 {	Zom X88 ↵	Set zoom percentage from 100% (default) to 200%.
View	{	X88 ↵	View zoom percentage.
Pan			
Right	+1	Hpn X89 ↵	
Left	–1	Hpn X89 ↵	
Up	–2	Vpn X89 ↵	
Down	+2	Vpn X89 ↵	
Output Scaler Rate			
NOTE *Add a leading 0 when it is a single digit value*			
Set output rate	X91 * X92 =	Rte X91 * X92 ↵	Select output resolution and refresh rate.
View output rate	=	X91 * X92 ↵	Show selected output rate.
Output Sync Format			
Set format	6* X94 #	Syn X94 ↵	Set current output sync format setting.
View setting	6#	X94 ! ↵	View currently set output sync format.
Set polarity	7* X93 #	Pol X93 ↵	
View format	7#	X93 ! ↵	
Memory Presets (input 1 to 4)			
Recall preset	1* X95 .	1Rpr X95 ↵	Recalls memory preset X95 for selected input.
Save preset	1* X95 ,	1Spr X95 ↵	Saves memory preset X95 for selected input.
Input Presets (for input 4 only)			
Recall preset	2* X96 .	2Rpr X96 ↵	Recalls input 4 preset X96 .
Save preset	2* X96 ,	2Spr X96 ↵	Saves input 4 parameters to X96 .
Write/Read input preset name			
Write preset name	Esc X96 , X84 NG←	Nmg X96 , X84 ↵	Name preset X96 as "X84".
Read preset name	2* X96 ,	2Spr X96 ↵	Save preset X96 as "X84".

NOTE *If a preset has not been saved, then X84 displays [unassigned]. The preset name is also the OSD text label that displays on the screen when recalled. Changing the input preset name also updates the OSD text label of that input.*

NOTE
X80 = 0 or 1
X84 = Text label/Preset name: Up to 16 characters
X89 = Pan (Values depend on current output rate and zoom %)
X91 = Output resolution 1 to 22 for resolutions 640 x 480 to 1280 x 800 (see page 3-7)
X92 = Output refresh rate: 1 to 6 for rates 24 Hz to 120 Hz (see page 3-7)
X93 = Output polarity: 0 = H - / V -, 1 = H - / V +, 2 = H + / V -, 3 = H+/ V +
X94 = Output sync format: 0 = RGBHV (default), 1 = RGBS, 2 = RGsB, 3 = Y, R-Y, B-Y
X95 = Memory presets: 1 to 3
X96 = Input 4 presets: 1 to 128

Serial Communication, cont'd

Command/response table for SIS commands (continued)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Audio mute (audio models only)			
Mute on	1Z	Amt1↵	Mute selected input.
Mute off	0Z	Amt0↵	Un-mute selected input.
View status	Z	X80 ↵	View mute status (0= mute off, 1= mute on).
Audio gain and attenuation (audio models only)			
NOTE *The set gain (G) and set attenuation (g) commands **are case sensitive**. The increment, decrement, and view commands **are not**.*			
NOTE *Add a leading 0 when it is a single digit value*			
Specific gain	X102 G	Aud X102 ↵	Set gain to X102 dB.
Set attenuation	X103 g	Aud X103 ↵	Set attenuation to X103 dB.
Increment	+G	Aud X101 ↵	Increment audio level (up).
Decrement	- G	Aud X101 ↵	Decrement audio level (down).
View	G	X101 ↵	View current audio level.
Volume control (audio models only)			
Specific volume	X104 V	Vol X104 ↵	Set volume to X104.
Increment	+V	Vol X104 ↵	Increase volume.
Decrement	- V	Vol X104 ↵	Decrease volume.
View	V	X104 ↵	View current volume setting.
Test Pattern			
NOTE *These commands **are not case sensitive**. Both (J) and (j) can be used interchangeably.*			
Crop	1J	Tst 1↵	Set crop test pattern on.
Alternating pixels	2j	Tst 2↵	Set alternate pixels on.
Color bars	3J	Tst 3↵	Set color bars on.
Off	0J	Tst 0 ↵	Set test pattern off.
View Test Pattern	J	X104 ↵	View the test pattern.
Freeze			
NOTE *These commands **are not case sensitive**. Both (F) and (f) can be used interchangeably*			
Enable	1f	Frz 1↵	Freeze selected input.
Disable	0F	Frz 0↵	Unfreeze selected input.
View	F	X80 ↵	Show the freeze status (1= on, 0= off).
RGB delay time			
Set RGB Delay	3* X107 #	Dly X107 ↵	Set RGB delay to (X107 x 0.5) seconds.
View setting	3#	X107 ↵	View RGB delay setting.

NOTE X80 = 0 or 1
X101 = Audio level adjustment   range: -15 to +9 dB
X102 = Audio gain adjustment   range: 0 to 9 dB
X103 = Audio attenuation   adjustment range: -15 to 0 dB
X104 = Volume range: 000 to 100 (always returns 3 digits)
X107 = RGB delay: 0 to 10 (0 to 5 seconds in 0.5 second steps)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Auto Switch Mode			
On	10*1#	Asw 1↵	Set auto switch mode on.
Off	10*0#	Asw 0↵	Set auto switch mode off.
View setting	10#	X80 ↵	View the auto switch mode status. (0= off, 1= on).
Blue Screen			
On	8*1#	Blu 1↵	Set blue screen on.
Off	8*0#	Blu 0↵	Set blue screen off.
View setting	8#	X80 ↵	View the current blue mode status (0= off, 1= on)
Auto Image			
Enable	55*1#	Img 1↵	Activates auto image for all inputs.
Disable	55* 0#	Img 0↵	Turn auto image off.
Execute	55* 2#	Img 2↵	Apply auto image to the selected input.
View	55#	X80 ↵	View auto image setting. (0= disabled, 1= enabled).
OSD (On Screen Display) duration			
Select speed	20*X98#	Dur X98 ↵	Sets the OSD duration
View speed	20#	X98 ↵	View the On screen display time.
Text label (OSD) (Input 4 only)			
Write Name	Esc X84 NI↵	Nam 4↵	Writes text X84 for input 4.
Read Name	Esc NI↵	X84 ↵	View text label for input 4
PIP size			
PIP size	16*X105#	Pmd X105 ↵	Select size of PIP window.
View	16#	X105 ↵	View PIP window size.
PIP mode			
PIP on	17*X100#	Pip X100 ↵	Turn PIP mode on with PIP window from input X100.
PIP off	17*0#	Pip 0↵	Turn PIP mode off.
View	17#	X100 ↵	View selection status (on or off).

NOTE *When PIP is active, all controls apply to the PIP window. The main window cannot be modified while PIP window is displayed.*

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
Swap (when PIP mode is "On")			
	%	Tke0↵	Swap content between main and PIP window.
PIP mode audio follow (Audio model only)			
Set	19*X106#	Ald X106 ↵	Select audio follow setting in PIP mode.
View	19#	X106 ↵	View audio follow status.

NOTE
X80 = 0 or 1
X84 = Text label/Preset name: Up to 16 characters
X98 = OSD display setup: 0 to 5 seconds in 1 second steps
X100 = PIP window input selection: 0 to 4
X105 = PIP window size: 1 to 6 (see page 3-7)
X106 = PIP audio setup: 1 to 6 (see page 3-7)

Serial Communication, cont'd

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional description
General Information			
NOTE *These commands **are not case sensitive.** Both (I) and (i) can be used interchangeably*			
	I/i	Vid [X71] • Aud [X71] • Typ [X73]• Std [X81]• Pre [X81] [X81] [X81] • Sdi [X71]↵	
Query Firmware Version			
NOTE *These commands **are not case sensitive.** Both (Q) and (q) can be used interchangeably*			
	Q/q	x.xx↵	View the Firmware version.
Query Part Number			
NOTE *These commands **are not case sensitive.** Both (N) and (n) can be used interchangeably*			
	N/n	60-736-01/-02 /-03/-04↵	View the part number.
View Internal Temp.			
	20S	[X82]↵	Internal temp. deg Celsius.
Front Panel Security Lockout (Executive Mode)			
NOTE *These commands **are not case sensitive.** Both (X) and (x) can be used interchangeably*			
Enable	1X/x	Exe1↵	Limited front panel adjustments only.
Disable	0x	Exe0↵	Adjustments/selections can be made from front panel.
View status	X	[X80]↵	Show mode status. (0= disabled, 1= enabled)
SDI Field Flip			
Standard	73*0#	Flp 0↵	
Flip Fields	73*1#	Flp 1↵	
View	73#	Flp [X80]↵	(0= Standard, 1= Flipped)
Enhanced Mode			
Set mode	52* [X5]#	Enh [X5]↵	
View mode	52#	Enh [X5]↵	
Refresh Lock			
Enable	77*1#	RFl 1↵	
Disable	77*0#	RFl 0↵	
View status	77#	[X80]↵	(0= Disabled, 1= Enabled)
Auto Memory			
Enable	1M/m	Aut1↵	
Disable	0M/m	Aut0↵	
View status	M/m	[X80]↵	(0= Disabled, 1= Enabled)

NOTE

[X5]	= On/Off	0 = off/disable, 1 = on/enable
[X71]	= Input selection	1 to 4
[X73]	= Input video format	1 to 9 (see page 3-6)
[X80]	= 0 or 1	
[X81]	= Input Standard:	0 = None, 1 = NTSC 3.58, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM
[X82]	= Internal temperature	(in degree Celsius)

Command/response table for IP control port commands

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Ethernet data port				
Set current connection port timeout	Esc 0 * X69 TC ↵	W 0 %2A X69 TC ■	Pti 0 * X69 ↵	
View current connection port timeout	Esc 0TC ↵	W 0TC ■	X51 ↵	
Set global IP port timeout	Esc 1 * X69 TC ↵	W 1%2A X69 TC ■	Pti1 * X69 ↵	
View global IP port timeout	Esc 1TC ↵	W 1TC ■	X69 ↵	
Firmware version requests				

> **NOTE** An asterisk (*) after the version number indicates the version currently running. Caret (^) indicates bad checksum/invalid load. Question marks (?) indicate version not loaded.

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Query firmware version	Q or 1Q	Q or 1Q	X11 ↵	Show the processor's firmware version number (X11) to two decimal places. Gives the number of the currently running version of the user-updatable firmware.
Query verbose version information	0Q	0Q	All responses from 2Q-3Q-4Q ↵	Show bootstrap, factory-installed, and updated firmware versions. (See 2Q, 3Q, and 4Q, below.)
Example:	1Q	1Q	1.01	
Query bootstrap version	2Q	2Q	X11 ↵	The bootstrap firmware is not user-replaceable but you may need this information for troubleshooting.
Example:	2Q	2Q	0.06	
Query factory firmware version	3Q	3Q	X11 (plus web ver-desc-UL date/time) ↵	Factory-installed firmware is not user replaceable. This firmware is the version the processor reverts to after a mode 1 reset (see chapter 2).
Example:	3Q	3Q	1.00(1.37-DVS 304 Series -Fri, 12 Aug 2005 03:28:10 GMT)	In this example, the factory firmware version is 1.00, (the kernel version 1.37), for the DVS 304,dated 12 August, 2005

> **NOTE**
> X11 = Version number
> X51 = Extended-security (Password) levels: (listed to 2 decimal places)
> 1 – 10. The response is returned as 2 digits with a leading zero
> X69 = The number of seconds before timeout on the IP connection: (min = 1; max = 65000; default = 30 seconds). See page 3-6 for information

Command/response table for IP control port commands (continued)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Query updated firmware version	4Q	4Q	X11 ↵	Use this command to find out which version f firmware has been uploaded into the processor post factory.
Example:	4Q	4Q	1.01 * (1.46-DVS 304 Series -Mon, 17 Jan 2005 17:03:46 GMT)	In this example, factory firmware version is 1.01, kernel version 1.46, for DVS 304, dated 1Jan, 2005
Information requests				
Request processor part number	N	N	60-XXX-XX ↵	Show processor part number. DVS 304 is 60-736-01 DVS 304 A is 60-736-02
Request model name	1I	1I	Extron Electronics DVS 304 X ↵	Show processor model name
Request model description	2I	2I	Digital Video Scaler	Show type of unit.
Request system memory usage	3I	3I	# Bytes used out of #Kbytes ↵	Show amount of memory used and total available memory for system operations.
Request user memory usage	4I	4I	# Bytes used out of #Kbytes ↵	Show amount of user memory used and total vailable user memory.
Event Control				
Read event memory buffer [27]	Esc X35, X36, X37, X38 E ↵	W X35, X36, X37, X38 E |	X54 ↵	Read the contents of a specific section of a memory buffer for event number X54.
Write event to memory buffer[24][27]	Esc X35, X36, X37, X38, X39 E ↵	W X35, X36, X37, X38, X39 E |	Ewr X35, X39 ↵	Write event X35 to buffer X36, offset by X37. Include data X39, size X38.
Read string from event buffer memory[27]	Esc X35, X36, X37, X44 FE ↵	W X35, X36, X37, X44 FE |	{string} ↵	Read string from event X35, buffer X36, offset by X37, X44 bytes.
Write string to event buffer memory[24][27]	Esc X39, X35, X36, X37 FE ↵	W X39, X35, X36, X37 FE |	Ewr X35, X39 ↵	Write data string X39 from event X35, buffer X36, offset by X37.
Start events[24][27]	Esc 1AE ↵	W1AE |	Ego ↵	Initiate all programmed events.

NOTE
X11 = Version number
X35 = Event number
X36 = Event buffer:
X37 = Event buffer offset
X38 = Event data size
X39 = Event data to write
X44 = Number of bytes to read
X54 = ASCII digit(s) representing the numeric

(listed to 2 decimal places)
range: 0 - 99
0 = receive, 1 = unified, 2 = data, 3 = NVRAM
(range: 0 to MaxBufferSize)
b = bit, B = byte (8 bits), S = short (16 bits), L = long (32 bits)
(range =1-24 max)
value of the data element read from the event buffer (leading zeros are suppressed)

NOTE *This parameter is case sensitive.*

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Stop events[24][27]	Esc 0AE ↵	W0AE|	Est • ↵	Stop all programmed events.
Read number of events running	Esc AE ↵	WAE|	Enm## ↵	## = number of events running
E-mail				
Configure e-mail events[24] *Example:*	Esc X45, X46, X47, CR ↵ Esc 5, jdoe@extron.com, 7.eml CR ↵	W X45 X46, X47, CR| W5%2Cjdoe% 40extron%2Exom%2C 7%2Eem1 CR|	Ipr X45, X46, X47, ↵ lpr5,jdoe@extron.com, 7.eml ↵	X45 = e-mail event number (1-64) X46 = e-mail event 5, send file 7.eml to jdoe@extron.com
Read e-mail events	Esc X45 CR ↵	W X45 CR|	X46, X47 ↵	
Send e-mail (event)	Esc X45 SM ↵	W X45 SM|	Eml X45 ↵	
Send e-mail (using a different file)[24]	Esc X45, X46, X47, SM ↵	W X45 %2C X70 %2C X47 SM|	Eml X45 ↵	
Set mail server IP address, unit domain name[24]	Esc X14, X15 CM ↵	W X14 %2C X15 CM|	Ipm • X14, X15 ↵	
Read mail server IP address, unit domain name[24][28]	Esc CM ↵	W X14 %2C X15 CM|	X14, X15 ↵	

NOTE X14 = IP address (xxx.xxx.xxx.xxx): leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.
X15 = Mail domain name (e.g., Extron.com)
X45 = E-mail event number (1 - 64 max). The response is returned as 2-digits with leading zeros.
X46 = E-mail recipient's address
X47 = Name of e-mail file to be sent. First line of the file is the subject. The rest is the body of the e-mail.

NOTE *The SM command will send a default e-mail message if file X47 is not found.*
X70 = Number (as optional parameter) that will get inserted into email message if .eml file has an embedded server-side include "<!--#echo var="WCR|"-->" (ESC CR command with no params). Use 0 as placeholder if optional X47 is used but X70 isn't needed.

Command/response table for IP control port commands (continued)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Web browser specific				
Read response from last URL cmd	Esc UB ↵	WUB|	*Response from command* ↵	
IP setup commands				
Set unit name[24]	Esc [X12] CN ↵	W[X12] CN|	Ipn • [X12] ↵	Change the processor's name to one of your choosing ([X12]). The name consists of up to 24 alphanumeric characters (and the minus. The first character must be a letter, the last character cannot be a minus sign (hyphen). Case does not matter.
Set unit name to factory default[24]	Esc • CN ↵	W%20CN|	Ipn • [X49] ↵	[X49] is the name the processor was shipped with: DVS304-##-##-##, a combination of the model name and the last 3 pairs of the hex numbers in the processor's MAC address (e.g., DVS304-00-02-3d).
Read unit name	Esc CN ↵	WCN|	[X12] ↵	[X12] is the processor's current unit name.
Set time/date[24]	Esc [X13]CT ↵	W [X13] CT|	Ipt • [X13] ↵	[X13] is local date and time format. The **set** format is MM/DD/YY-HH:MM:SS. *Example:* 11/18/03-10:54:00
Read time/date	Esc CT ↵	WCT|	[X13] ↵	The **Read** format is *day of week DD month year* HH:MM:SS. *Example:* Tue, 18 Nov 2008 18:19:33

NOTE

[X12] = Name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must not be a minus. No blank or space characters are permitted, and no distinction is made between upper and lowercase.

[X13] = Local date and time format **Set** format (MM/DD/YY-HH:MM:SS); e.g., 06/21/02-10:54:00 **Read** format (day of week, date month year (HH:MM:SS), e.g., Thu, 20 Feb 2003 18:19:33

[X49] = Default name: a combination of the model name and the last 3 character pairs of the unit's MAC address (e.g., DVS-304-00-023D)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set GMT offset[24]	Esc X3 CZ ←	W X3 CZ I	Ipz X3 ↵	Set the Greenwich Mean Time GMT offset value (X3) for the processor's location. GMT offset (-12.00 to +14.00) represents the time difference in hours and minutes (± hh:mm relative to Greenwich, England. The plus sign and leading zero are optional. *Example:* 5:30 = +05:30
Read GMT offset	Esc CZ ← Esc	WCZ I	X5 ↵	
Set daylight savings time[24]	Esc X34 CX ←	W X34 CX I	Ipx X34 ↵	X34 is the Daylight Savings time of day. Daylight Savings Time (DST) is a 1-hour
Read daylight savings time	Esc CX ←	WCX I	X34 ↵	
Set DHCP on[24]	Esc 1DH ←	W1DH I	Idh1 ↵	
Set DHCP off[24]	Esc 0DH ←	W0DH I	Idh0 ↵	
View DHCP mode	Esc DH ←	WDH I	Idh X5 ↵	X5 = 0 (off) or 1 (on)
Set IP address[24]	Esc X14 CI ←	W X14 CI I	Ipi • X14 ↵	X14 = IP address (xxx.xxx.xxx.xxx) Leading zeros in each of the four fields are optional in setting values.
Read IP address[24]	Esc CI ←	WCI I	X14 ↵	Leading zeros in each of the four fields are suppressed in returned values
Read hardware address (MAC)	Esc CH ←	WCH I	X18 ↵	X18 = hardware media access control (MAC) address (xx-xx-xx-xx-xx-xx).

NOTE
X3 = Greenwich Mean Time (GMT) offset value (-12:00 to 14:00) in hours and minutes (hh:mm)
X5 = On/Off 0 = off/disable, 1 = on/enable
X14 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.
X18 = Hardware (MAC) address (xx-xx-xx-xxxx)
X34 = Daylight savings time (used in the northern hemisphere [USA] and parts of Europe and Brazil) 0 = off/ignore, 1 = on, 2 = Europe, 3 = Brazil

Command/response table for IP control port commands (continued)

IP setup commands, continued

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set subnet mask[24]	Esc X19 CS ←	W X19 CS ⏐	Ips•X19 ↵	X19 is the subnet mask (xxx.xxx.xxx.xxx). Syntax is the same as for the IP addresses. Leading zeros are optional in setting values.
Read subnet mask	Esc CS ← Esc	WCS ⏐	X19 ↵	Leading zeros are suppressed.
Set gateway IP address[24]	Esc X14 CG ←	W X14 CG ⏐	Ipg•X14 ↵	X14 is IP address. Leading zeros are optional.
Read gateway IP address	Esc CG ←	WCG ⏐	X14 ↵	
Set broadcast mode	Esc X64 X14 EB ←	W X64 %2C X14 EB ⏐	Bmd X64 X14 ↵	
Set administrator password[24]	Esc X33 CA ←	W X33 CA ⏐	Ipa•X33 ↵	Set the administrator access password (X33 is 4-12 alphanumeric characters) The password is case sensitive. Special characters (spaces or symbols) are not allowed.

NOTE *A user password cannot be assigned if an administrator password does not exist. Entering a password when the DVS 304 has not been configured yields an E14 response from the processor. If the administrator password is cleared (removed), the user password is also removed.*

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Clear administrator password[24]	Esc •CA ←	W%20CA ⏐	Ipa•↵	Clear/remove all passwords (administrator and user)
Read administrator password	Esc CA ←	WCA ⏐	X33 ↵	
Set user password[14][24]	Esc X33 CU ←	W X33 CU ⏐	Ipu•X33 ↵	Set the user access password (X33 is 4-12 alphanumeric characters) The password is case sensitive. Special characters (spaces or symbols) are not allowed.

NOTE *A user password cannot be assigned if an administrator password does not exist.*

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Clear user password[24]	Esc •CU ←	W%20CU ⏐	Ipu•↵	This clears the user password only
Read user password[24]	Esc CU ←	WCU ⏐	X33 ↵	

NOTE
X14 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.
X19 = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and are suppressed in returned values.
X33 = Password (12 characters = maximum length; no special characters are allowed).
X64 = Broadcast repetition rate in seconds (0 – 255 max; default = 0 = clear). The response is returned with leading zeros. 1 – 11 = entry without password goes to the level pecified (if an admin password exists). The response as returned as 2-digits with a leading zero.

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description

IP setup commands, continued

| Set Verbose mode [24] | Esc X22 CV ← | W X22 CV \| | Vrb X22 ← | Set verbose mode. |

> **NOTE** The processor can send out unsolicited information (such as notice of a volume or input change or a change in some other setting). That is called verbose (wordy) relationship between the processor and a connected device. For a direct RS-232/422 connection, the processor is set for Verbose mode by default. When the DVS 304 is connected via Ethernet, Verbose mode is disabled by default in order to reduce the amount of communication traffic on the network. If you want to use the Verbose mode with a processor connected via Ethernet, this mode must be set to On each time you reconnect to the processor.

| Read verbose mode | Esc CV ← | WCV \| | X22 ← | |
| Read connection's security level | Esc CK ← | WCK \| | X52 ← | |

Re-map port designations

Set Telnet port map [24]	Esc {port #}MT ←	W{port #}MT |	Pmt{port #} ←	
Reset Telnet port map [24]	Esc 23MT ←	W23MT |	Pmt00023 ←	
Disable Telnet port map [24]	Esc 0MT ←	W0MT |	Pmt00000 ←	
Read Telnet port map	Esc MT ←	WMT |	{port #} ←	
Set Web port map [24]	Esc {port #}MH ←	W{port #}MH |	Pmh{port #} ←	
Reset Web port map [24]	Esc 80MH ←	W80MH |	Pmh00080 ←	
Disable Web port map [24]	Esc 0MH ←	W0MH |	Pmh00000 ←	
Read Web port map [24]	Esc MH ←	WMH |	{port #} ←	
Set Direct Access port map [24]	Esc {port #}MD ←	W{port #}MD |	Pmd{port #} ←	
Reset Direct Access port map [24]	Esc 2001MD ←	W2001MD |	Pmt02001 ←	
Disable Direct Access port map [24]	Esc 0MD ←	W0MD |	Pmd00000 ←	
Read Direct Access port map [24]	Esc MD ←	WMD |	{port #} ←	

NOTE X22 = Verbose/Response Mode (Default = 0 for Telnet connections; 1 for RS-232 host control).
0 = clear/none, 1 = verbose mode, 2 = tagged responses for queries, 3 = verbose mode and tagged responses for queries

If tagged responses is enabled, all read commands will return the constant string + the data, like setting the value does (e.g. command: Esc CN ← response: Ipn • x12 ←).

X52 = Connection's security level: 0 = anonymous, 1 – 10=extended security levels 1 thru 10, 11 = user, 12 = administrator

Command/response table for IP control port commands (continued)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Listing connections				
Get connection listing	[Esc] CC ←	WCC|	(See below.)	

Remote client IP address: port number, time/date when connection was made, total connection time ↵
Remote client IP address: port number, time/date when connection was made, total connection time ↵
Remote client IP address: port number, time/date when connection was made, total connection time ↵
...
Total clients • connections available ←↵

Unit Web responses: HTML Sample Code
var connections = new Array ():
connections [1] = 'Client IP1, timedate 1, uptime 1';
connections [2] = 'Client IP2, timedate 2, uptime 2';
connections [3] = 'Client IP3, timedate 3, uptime 3';
...
connections [n] = 'Client IPn, timedate n, uptime n';
connections [n + 1] = 'total clients, connections available';

File commands				
Read Direct Access port map	[Esc] MD ←	WMD|	{port#} ↵	
Get listing	[Esc] DF ←	WDF|	(See below.)	Retrieve a list of files stored in the DVS 304. Each line of the response lists a different file name and its corresponding file size. The

Unit Telnet text responses:

filename x • date/time * length ↵
filename x • date/time * length ↵
filename x • date/time * length ↵
filename x • date/time * length ↵
...
space_remaining • Bytes left ←↵

Unit Web responses:

var file - new Array ():
file [1] = 'filename 1, date 1, filesize 1';
file [2] = 'filename 2, date 2, filesize 2';
file [3] = 'filename 3, date 3, filesize 3';
...
file [n] = 'filename n, date n, filesize n';
file [n + 1] = 'space remaining, Bytes left'

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Stream files via port 80				
Load file to user flash memory	Use POST on port 80 followed by the delimited data to be written to the flash file memory.			
Retrieve file from user flash memory	Send a page GET on port 80 followed by: WSF |		{Responds with raw unprocessed data in file.}	
Example: http://192.168.254.254/mypage.html?cmd=WSF|				
Stream files via Telnet or RS-232				
Load file to user flash memory	Esc + UF filesize, filename ↵	{Raw unprocessed data in file up to filesize}	Upl ↵	
Retrieve file from user flash memory	Esc filename SF ↵	1B filename 52 46 0D	{Responds with raw unprocessed data in file + 1 byte checksum.}	
Directory commands				
Change/create directory	Esc {path}/{directory}/ CJ ↵	W {path}/{directory}/CJ |	Dir•/{path}/{directory}/ ↵	
NOTE *A directory does not actually exist until a file has been copied into the path.*				
Move back to root directory	Esc / CJ ↵	W%2FCJ|	Dir•/ ↵	
Move up one directory	Esc ..CJ ↵	W%2E%2ECJ|	Dir•/{path}/{direc-	
View current directory	Esc CJ ↵	WCJ|	{path}/{directory}/ ↵	
File erase commands				
Erase user-supplied Web page/file[24,28]	Esc {filename} EF↵	W {filename} EF|	Del • {filename} ↵	
Erase current directory and its files[24,28]	Esc /EF↵	W/EF|	Ddl ↵	
Erase current directory and subdirectories[24,28]	Esc //EF↵	W//EF|	Ddl ↵	

Reset (ZAP)/Erase Commands

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Erase flash memory[24]	Esc ZFFF ←	WZFFF |	Zpf ←	
Reset all device settings to factory default[24]	Esc zXXX ←	WzXXX |	Zpx ←	No IP-related settings are reset.
Absolute system reset	Esc ZQQQ ←	WZQQQ |	Zpq ←	Reset all settings/memories. The ZQQQ command resets all settings, adjustments, the IP address, and subnet mask to the fac-
Set audio (DVS 304 A and DVS 304 A D only)	Esc ZA ←	WZA |	Zpa ←	Reset all audio settings
Image setting reset	Esc ZI ←	WZI |	ZapI ←	Clears current working memory, Auto memories, all presets, and input types.

Control Software for Windows®

The included Extron DVS 304 Control Program for Windows offers another way to control the DVS 304 via RS-232 connection in addition to the Simple Instruction Set commands. The control program's graphical interface includes the same functions as those on the scaler's front panel and some additional features that are only available through the Windows-based software.

The control software is compatible with Windows 98, Windows NT, Windows 2000, and Windows XP. Extron's DVS 304 Control Program is included with the scaler, and updates can be downloaded from the Extron Web site (http://www.extron.com).

Downloading the software

To download the software from the Web and install it on your PC's hard drive:

1. On the Extron Web site, select the Download tab.

2. On the Download Center screen, select Software from the side-bar menu on the left.

3. Locate the Signal Enhancement Products file from the list and click on it.

4. Follow the onscreen instructions to download the program to your PC.

5. Double-click the S_ENHANC.exe icon (shown at right). The Signal Enhancement control window opens.

Installing the software from a CD

NOTE *The configuration program require approximately 32 MB of hard disk space.*

To install the software on the hard drive:

1. Insert the CD-Rom into your CD drive. The disk starts automatically.

2. If the disk does not start automatically, run LAUNCH.EXE from the CD.

3. Follow the instructions that appear on the screen.

By default, the installation creates a C:\Program Files\Extron\S-ENHANC directory and places a shortcut icon in it.

Using the control program

Many items found in the DVS 304 Control Program are also accessible via front panel controls and the LCD menus described in chapter two. Refer to chapter two for details on features and settings. The DVS 304 Help Program provides information on settings and on how to use the control program itself. Some features, including the miscellaneous options, are only available via this control program. These features are described in the sections of this chapter that correspond to the parts of the control program where the features are found.

1. To run the control program, double-click on the DVS 304 Control Pgm icon in the Extron Electronics group or folder. The Comm menu appears on the screen.

2. Click on the comm port that is connected to the DVS 304's RS-232 port or connect through the IP address. The Extron DVS 304 Control Program window appears.

Serial Communication, cont'd
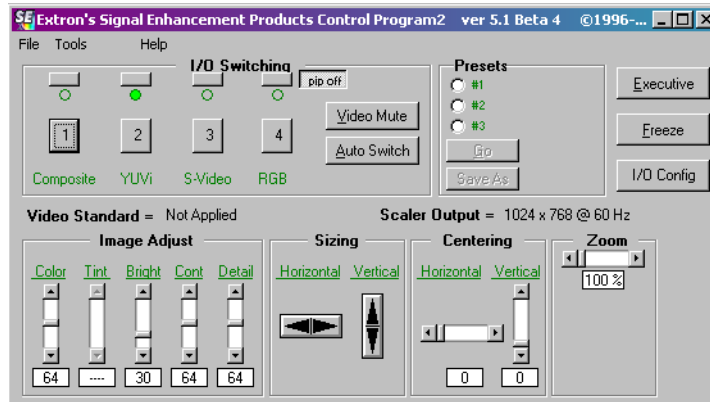
3. Click the **I/O Config** button to configure the inputs from the I/O Configuration Window.
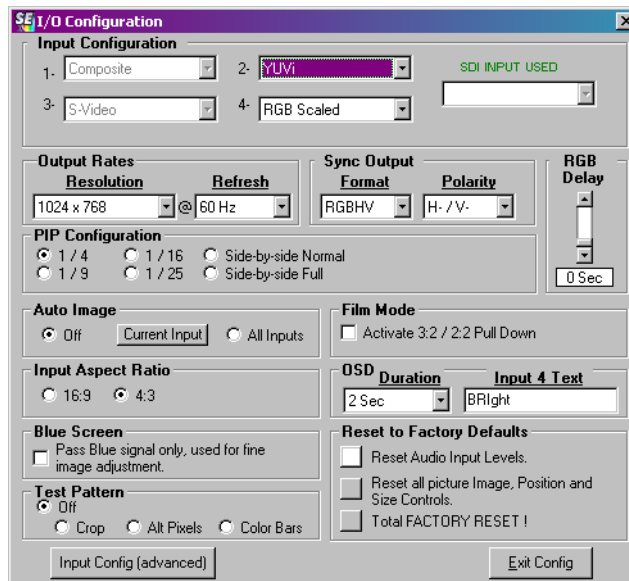
4. Click the **Input Config (advanced)** button for advanced input parameters, as shown below.
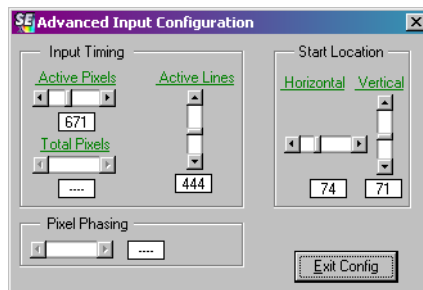
5. Adjust Input Timing, Pixel Phasing, and Start location to desired parameters. Click on **Exit Config** to exit the Advanced Input Configuration window.

6. When configuration is complete or to completely exit the program, click on the X in the top right corner of the DVS 304 Windows Control Program window that was opened in step **2** above.

Using the help program

For information on program features, press the F1 computer key, or click on the Help menu from within the DVS 304 Control Program, or double-click on the DVS 304 Help icon in the Extron Electronics group or folder.

For explanations of buttons or functions, click on the tabs in the help screen to reach the desired screen. Use a mouse or the Tab and Enter keys to select a button/function. A description and tips on using the program will appear on screen.

Serial Communication, cont'd

Chapter Four

Ethernet Control

Accessing and Using the Web Server

Navigating the Default Web Pages

Ethernet Control

The DVS 304 features an on-board Web server, displayed as a set of default Web pages. These pages allow you to control and operate the DVS 304 unit through its Ethernet port, connected via a LAN or WAN, using a Web browser such as Microsoft's Internet Explorer (version 5.5 or higher), or Netscape Navigator (version 6.0 or higher).

This chapter describes these default Web pages, which are always available and cannot be erased or overwritten.

Accessing and Using the Web Server

Access the DVS 304 through the on-board Web server pages as follows:

1. Double click the Web browser icon on your Windows desktop to launch your Web browser.

2. Click in the browser's Address field.

3. Enter the unit's IP address in the browser's Address field.

NOTE *If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.*

4. If you want the browser to display a page other than the default page (such as a custom page that you have created and uploaded), enter a slash (/) and the file name to open.

NOTE *The browser's Address field should display the address in the following format: xxx.xxx.xxx.xxx/{optional_file_name.html}*

The following characters are invalid in file names: {space} ~ @ = ' [ ] { } < > ' " ; : | \ and ?.

5. Press the keyboard Enter key.

The DVS 304 checks to see if it is password protected.

If it is not password protected, proceed to step **7**.

If it is password protected, the DVS 304 downloads the Enter Network Password page (figure 4-1).
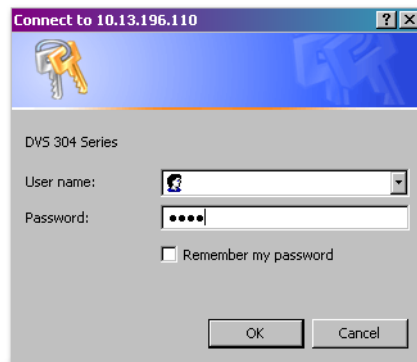
Figure 4-1 — Network Password window

NOTE *A User name entry is not required.*

6. Click in the Password field and type in the appropriate administrator or user password.

7. Click the OK button.

The scaler checks several possibilities, in the following order, and then responds accordingly:

a. Does the address include a specific file name, such as 10.13.156.10/file_name.html? **If so**, the DVS 304 downloads that HTML page.

b. Is there a file in the scaler's memory that is named "index.html"? **If so**, the scaler downloads "index.html" as the default start-up page.

c. **If neither of the above conditions is true**, the scaler downloads the factory-installed default start-up page, "nortxe_index.html" (figure 4-2, shown below), also known as the System Status page.

Navigating the Default Web Pages
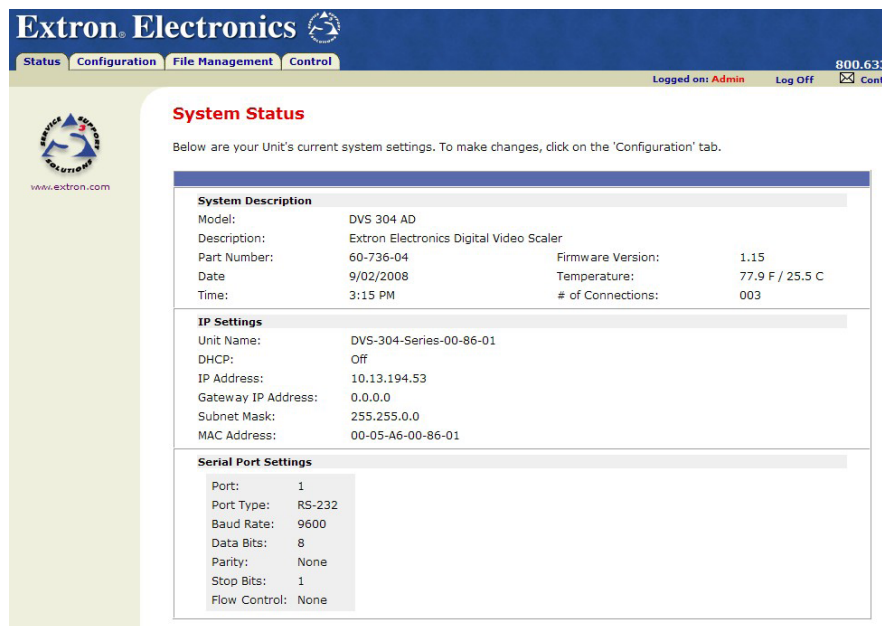
The DVS 304 default Web pages include four tabs (Status, Configuration, File Management, and Control) for easy navigation of several administrative options including system status, password control, file management, and scaler settings.

Status

The Status tab displays the System Status page for the DVS 304.

System Status page

The System Status page (figure 4-2), is the default page of the on-board Web server, and provides an overall view of the status of the complete scaler. It provides immediate system information, power status and serial port settings for the DVS 304 unit.

Figure 4-2 — System Status page

Configuration

The Configuration tab includes pages that show the current system settings, scaler settings, passwords and firmware upgrade data for the DVS 304 series.

System Settings page

The Systems Settings page (figure 4-3) consists of fields where you can view and edit IP administration and system settings. Date and time information can be easily updated.

Figure 4-3 — System Settings page

IP settings fields

The IP settings fields provide a location for viewing and editing settings unique to the Ethernet interface. After editing any of the settings on this page, click the *Submit* button. Explanations for some of these fields follows.

Unit Name

This name field can be changed to any valid name, up to 12 alphanumeric characters.

> **NOTE** *The following characters are invalid in the name: {space} ~ @ = ' [ ] { } < > ' " ; : | \ and ?.*

DHCP

The Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. DHCP can be used to automatically assign IP addresses, deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and provide other configuration information such as the addresses for printer, time and news servers. For specific settings information, see your system administrator.

IP Address

The DVS 304 IP Address field contains the IP address of the connected scaler. This value is encoded in the flash memory in the scaler.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per field, are optional. Values of 256 and above are invalid.

The default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE   *Editing the Extron IP address while connected via the Ethernet port can immediately disconnect the user from the scaler. Extron recommends editing this field using the RS-232 link and protecting the Ethernet access to this screen by assigning an administrator's password to qualified and knowledgeable personnel only.*

Edit this field as follows:

1.   Click in the DVS 304 IP address field. The graphic cursor becomes a text cursor.

2.   Edit the address as desired.

3.   Press the Tab key on the keyboard or click in another field to exit the IP Address field.

4.   Click on the *Submit* button to make the address change take affect.

Gateway IP Address

The Gateway IP Address field identifies the address of the gateway to the mail server to be used if the DVS 304 and the mail server are not on the same subnet.

The gateway IP address has the same validity rules as the system IP address.

Subnet Mask field

The Subnet Mask field is used to determine whether the DVS 304 is on the same subnet as the controlling PC or the mail server when you are subnetting.

Date/Time Settings fields

The Date/Time Settings fields (figure 4-3) provide a location for viewing and setting the time functions. The adjustable variables are month, day, year, hours, minutes, AM/PM, and (time) zone.

Change the date and time settings as follows:

1.   Click the desired variable's drop box. A drop down scroll box appears.

2.   Click the desired value.

NOTE   *For quick setting of the date and time, click the* **Local Date/Time**.

Click **Cancel** *at any point before submitting to exit any field changes. The unit is not updated with those changes The screen refreshes and shows the current device settings.*

3.   Repeat steps **1** and **2** for all variables that need to be changed.

4.   If appropriate, select the Daylight Savings radio button for the DVS's region, to turn on the daylight savings time feature.

NOTE   *When a locations daylight savings time is turned on, the switcher automatically updates its internal clock between Standard Time and Daylight Savings Time in the spring and fall on the date that the time change occurs in the country or region selected. When Daylight Savings Time is turned off, the switcher does not adjust its time reference.*

5.   Select the Zone variable that is relevant for the DVS's location.

NOTE   *The Zone field identifies the standard time zone selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.*

5. Click **Submit**. The device is updated with the new settings.

Scaler Settings page

The Scaler Settings page (figure 4-4) simulates elements of the DVS 304 menu system, but also allows you to set video input signals (for inputs 2 and 4 only), define output resolutions, and remotely define advanced configurations.

Note that resolutions in the Resolution drop-down menu are linked to refresh rates as shown in the "Available Scaler Output Resolutions and Rates" table in chapter 2, *Installation and Operation*.
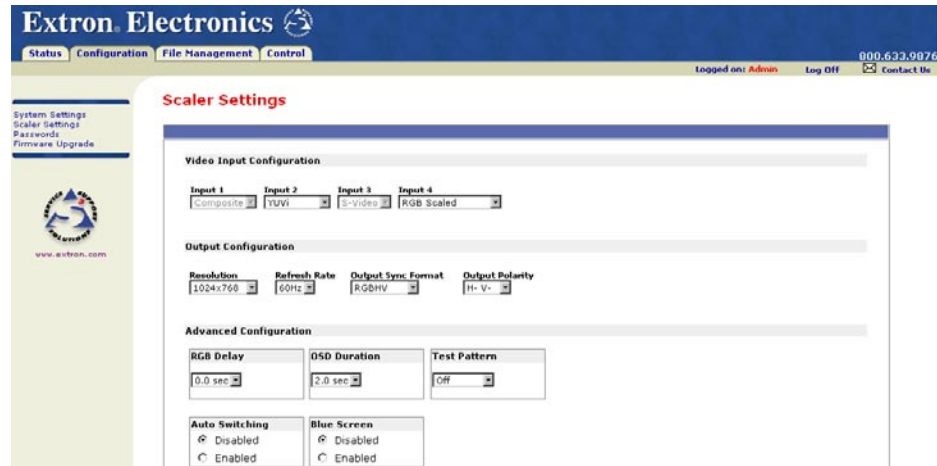
Figure 4-4 — Scaler Settings page
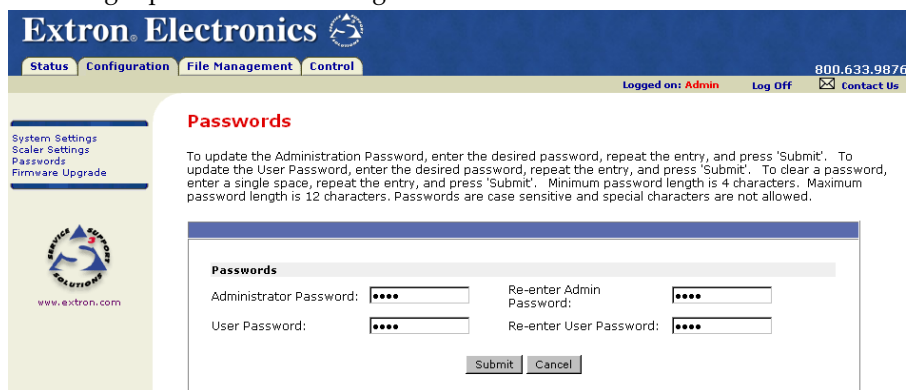
Passwords

The fields on the Passwords page are for entering and verifying administrator and user passwords. Passwords are case sensitive and are limited to 12 upper case and lower case alphanumeric characters. Each password must be entered twice; once in the Password field and then again in the Re-enter Password field. Characters in these fields are masked by asterisks (*****).

NOTE   *The following characters are invalid in passwords: {space} + ~ @ = ' [ ] { } < > ' " ; : | \ and ?.*

If you do not want to password protect an access level, leave the Password field and the Re-Enter password field blank. After entering the desired password in both fields, click the *Submit* button.

As shown in figure 4-5 below, password-protected connections allow two levels of protection: *administrator* and *user*. Administrators have full access to all DVS 304 switching capabilities and editing functions.

Figure 4-5 — Passwords page

Please keep in mind that

- Connecting via an Ethernet connection, entering SIS commands (see chapter 3, *Serial Communication*) or using the Windows®-based control program to access the DVS 304 **is** password protected.

- Connecting via the RS-232 port, entering SIS commands or using the Windows-based control program to access the DVS 304 **is not** password protected.

NOTE   *An administrator password must be created before a user password can be created.*

To clear an existing password so that no password is required, delete the asterisks in the Password field and place a blank space in the field. Click the *Submit* button.

Firmware upgrade page

The Firmware Upgrade page (figure 4-6) provides a way to replace the firmware that is coded on the scaler's control board without taking the scaler out of service, opening the scaler enclosure, and replacing the firmware chip.

Figure 4-6 — Firmware Upgrade page

| NOTE | *The Firmware Upgrade page is **only** for replacing the firmware that controls all scaler operation. To insert your own HTML pages, see "File Management" later in this chapter.* |

Insure that your PC is connected to the DVS 304 scaler via the scaler's Ethernet port. Update the scaler firmware as follows:

1. Visit the Extron web site at **www.extron.com**.

2. Select the DVS 304 product category from the "Product Shortcut" drop-down box, and select the latest firmware file for download.

3. Note the folder to which you save the firmware file.

4. Connect the PC to the DVS 304 scaler via the scaler's Ethernet port.

5. Access the DVS 304 scaler using the on-board Web server.

6. Click the Configuration tab.

7. Click the Firmware Upgrade link.

8. Click the Browse button. An open file window appears.

9. Navigate to the folder where you saved the firmware upgrade file. Select the file.

| NOTE | *Valid firmware files must have the file extension ".S19". Any other file extension is **not** a firmware upgrade.* |

| NOTE | *The original factory-installed firmware is permanently available on the DVS 304 scaler. If the attempted firmware upload fails for any reason, the scaler automatically reverts to the factory-installed firmware.* |

10. Click the Open button.

11. Click the Upload button. The firmware upload to the DVS 304 scaler may take a few minutes.

File Management

The File Management page (located under the File Management tab), is a useful tool that allows you to use and upload existing and custom Web pages. Custom pages can be developed using a third-party Web page development program such as FrontPage or Dreamweaver. File management also allows you to remove unnecessary or outdated files when they are no longer needed.

To add or update files:

1. Select the File Management tab and the File Management screen (figure 4-7) is displayed.
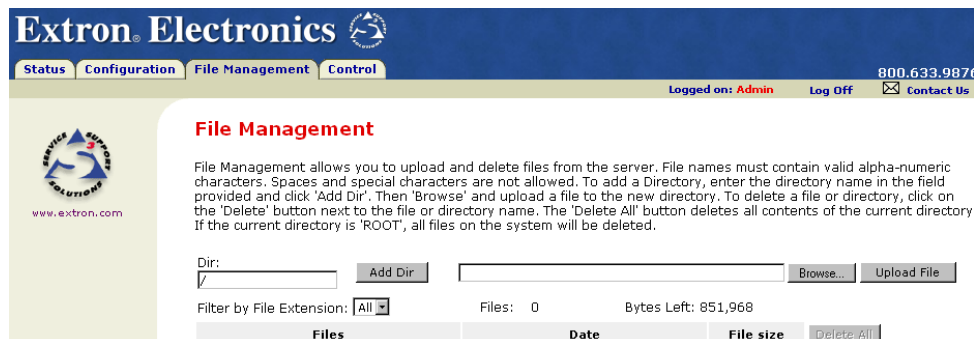
Figure 4-7 — Web server File Management screen

2. Click the Browse button to locate the file(s) you want to upload.

NOTE *If you want one of the pages that you create and upload to be the default start-up page, name that file "index.html".*

3. Click the Upload File button to upload the file.

The file will be added to the list of files under the Files column. After ten files have been loaded, additional file management pages will appear in the page navigation area (on the right side of the screen).

To add a directory:

1. Enter the directory name in the Dir field.

2. Click the Add Dir button.

3. Click the browse button, and locate your chosen directory.

4. Upload a file to the new directory.

To delete unwanted files:

1. Select the File Management tab and the File Management screen (figure 4-7) is displayed.

2. Find the file you wish to delete under the Files list.

3. Click the delete button of the file to be deleted. If you wish to delete additional files, wait for the screen to refresh before clicking the delete button of the next file.

If you wish to delete all files, click the Delete All button. The file count will revert to 0 and all subsequent pages will be deleted.

Control

The Control tab provides online access to DVS 304 unique features such as remote control of the front panel, memory and input presets, and picture in picture (PIP) setup.

User Control page

The User Control page (figure 4-8) simulates elements of the DVS 304 front panel, but also includes other features such as picture control, mute and freeze options, auto image, film mode, aspect ratio and front panel lockout (executive mode).
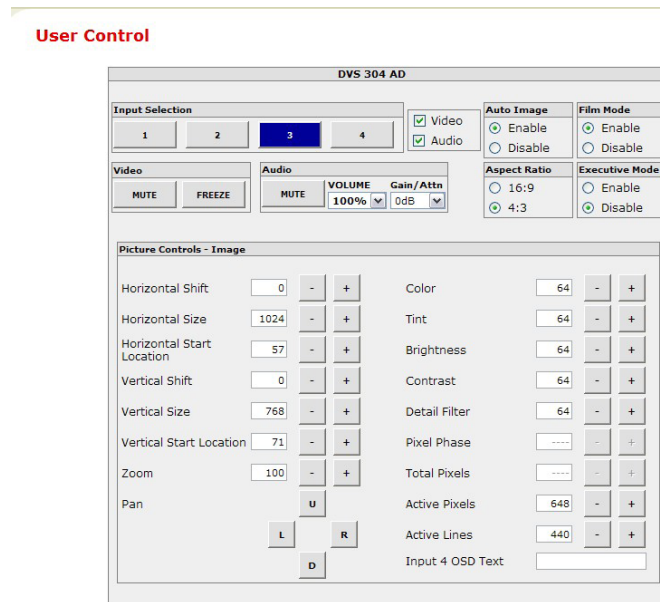
Figure 4-8 — User Control page

The aspects of each input (1-4) can be controlled independently. Click on the appropriate input number to immediately change its onscreen attributes.

Video/Audio breakaway (DVS 304 A or DVS 304 AD only)

Use the check boxes shown below to select whether video, audio or both are switched to the new selected input. When only one box is checked and the other is cleared (i.e., different audio and video sources are selected), this is a breakaway.
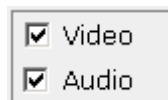
You can also define the volume level, mute audio, and set the level of gain and attenuation for each input (-15dB to +9dB), as shown below.
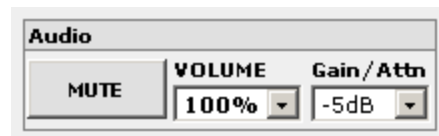
Presets page

The Presets page (located under the Control tab, figure 4-9), provides access to memory and input presets, and works in conjunction with the User Control page.
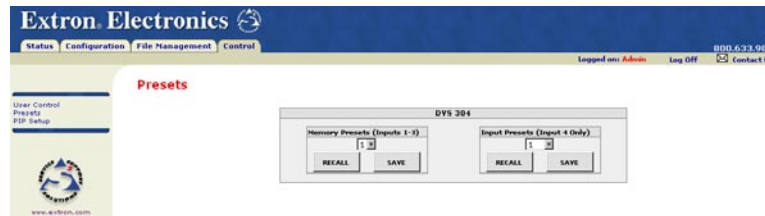
Figure 4-9 — Presets page

Memory presets

To create a memory preset, do the following:

1. Click the User Control link on the left side of the page. The User Control page appears (figure 4-8).

2. Click the button for the input (inputs 1, 2, or 3) you would like to preset.

3. Make changes to the attributes (e.g., aspect ratio, zoom, brightness, etc.) of your chosen input and press Enter.

4. Click the Presets link on the left side of the page. The Presets page appears (figure 4-9).

5. Use the drop-down menu to choose preset numbers 1, 2 or 3.

6. Click the Save button.

To return to a preset created after other changes were made, click the Recall button under the preset number. The preset attributes are restored.

Input presets (input 4 only)

To create a input preset, do the following:

1. From the Configuration tab, click the Scaler Setting link at the left of the page.

2. Select the desired input format for input 4.

3. Click the User Control link on the left side of the page. The User Control page appears (figure 4-8).

4. Click the button for the input 4.

5. Make changes to the picture control settings (e.g., aspect ratio, zoom, brightness, etc.). You can also create OSD text that is saved as part of the preset. This name can identify the device connected to this input for easy reference (e.g., DVD, VCR, etc.).

6. Click the Presets link on the left side of the page. The Presets page appears (figure 4-9).

7. Use the drop-down menu to choose preset numbers 1 through 128.

8. Click Save. The OSD text you created for the preset appears along with the preset number.

To return to a preset created after other changes were made, click the Recall button under the preset name/number. The preset attributes are restored and the OSD text appears on the top left corner for a time specified by the OSD duration setting.

To determine how long the OSD text appears on the screen, click the Scaler Settings link under the Configuration tab (figure 4-4) and select a duration length.

PIP Setup page

The PIP Setup page (located under the Control tab, figure 4-10), allows easy, remote access to the picture in picture option of the DVS 304 series.
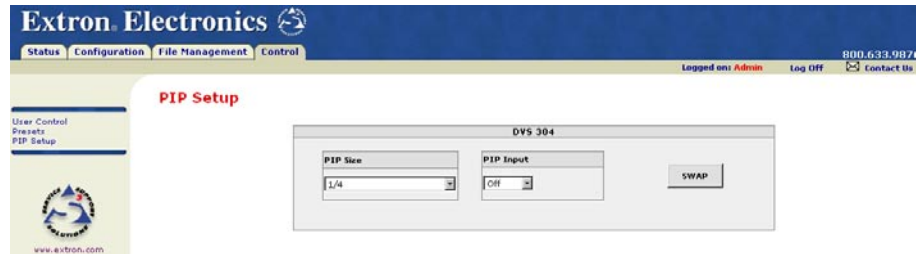
Figure 4-10 — PIP Setup page

To use this feature, do the following:

1. Click the User Control link on the left side of the page. The User Control page appears (figure 4-8).

2. Click the button for the input containing the main image source.

3. Click the PIP Setup link on the left side of the page. The PIP Setup page appears (figure 4-10).

4. Use the drop-down menu to set the size of the subordinate (PIP) picture.

5. Use the drop-down menu to choose the appropriate PIP input (See chapter 2, Installation and Operation, for information on PIP window selection). The attributes window for the PIP appears, as shown below.
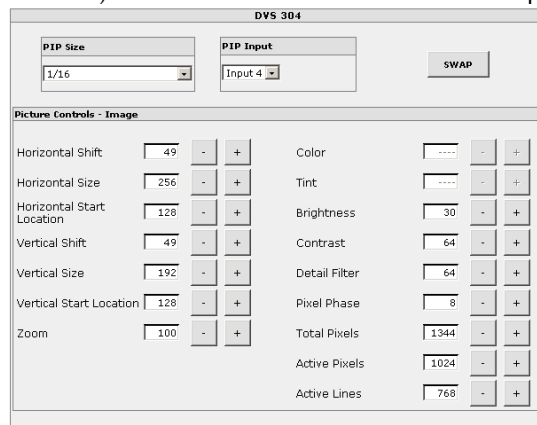
Figure 4-11 — PIP "On"

6. Once the PIP window is selected, its picture control settings are available on the PIP Setup page. (figure 4-10).

NOTE *When PIP is activated, the adjustments under the User Control page are also applied to the PIP window.*

7. Define the attributes for the PIP.

Use the Swap button to exchange the size and position of the main and PIP windows.

Audio (DVS 304 A only)

Use the Audio Follows radio button, shown right, to assign audio to either the main image or the PIP image.

DVS 304

A

Appendix

Menu System

DVS 304 Menu System

Menu System

DVS 304 Menu System

Default cycle menu

Power on → | EXTRON DVS 304 | → 2 sec. → | 60-736-01 FW ver. 1.xx | → 2 sec. → | INPUT 1 COMPOSITE | → 2 sec. → | OUTPUT 1024 x 768@60 |

Default Cycle — 2 sec.

Main menu

Power on → | EXTRON DVS 304 | → 2 sec. → | 60-736-01 FW ver. 1.xx | → 2 sec. → | INPUT 1 COMPOSITE | → 2 sec. → | OUTPUT 1024 x 768@60 |

Default Cycle — 2 sec.

MENU

| START AUTO IMAGE ON IN1 |

MENU

| INPUT CONFIG |

MENU

| PICTURE CONTROL |

MENU

| OUTPUT CONFIG |

MENU

| AUDIO CONFIG | **(Audio models only)**

MENU

| MEMORY PRESETS |

MENU

| IP CONFIG |

MENU

| ADVANCED CONFIG |

MENU

MENU — | TO EXIT MENU PRESS NEXT | — NEXT

Start Auto Image menu

Default Cycle

| INPUT 1
COMPOSITE | 2 sec. | OUTPUT
1024 x 768@60 | MENU | START AUTO
IMAGE ON IN1 | NEXT |

2 sec.

| PRESS NEXT
TO START | NEXT |

Input Configuration menu

START AUTO
IMAGE ON IN1

MENU

INPUT CONFIG — NEXT → **INPUT 2 YUVi** — NEXT → **INPUT 4 RGB SCALED** — NEXT → *Displays only when applicable* **SDI INPUT <*> 1 2 3 4** — NEXT → *Displays only when applicable* **SDI DE-INTER FIELD STNDRD** — NEXT → **ASPECT RATIO 4x3** — NEXT

NOTE Input 1 can only accept composite video. Input 3 can only accept S-video. Only Inputs 2 and 4 can be configured for different video types, although an SDI input can be assigned to any input.

Select video format
• Composite
• S-video
• YUVi
• YUVp
• YUV Auto

Select video format
• Composite
• S-video
• RGBcvS
• YUVi
• YUVp
• RGB scaled
• RGB pass
• Auto detect

Assign SDI to Input #
• 1, 2, 3, 4, * (none)

NOTE The SDI input signal can be assigned to any input. Once assigned to a specific input, only an SDI signal can be accepted on that input. SDI can be disabled by selecting the *.

NOTE SDI De-interlacing options:
• Field Standard
• Field Flip

Aspect ratio options
• 4 x 3
• 16 x 9

Displays only when applicable **FILM MODE <OFF> ON** ← NEXT ← **H ACTIVE V XXX XXX** ← NEXT ← **H START V 50 33** ← NEXT ← *Displays only when applicable* **TTLPIX PHASE XXXX 08** ← NEXT

Film mode
Turn On or Off for low resolution devices.

NOTE Not for use with YUVp or RGB inputs.

Horizontal active pixels
Specify the width in pixels of the active image area sampled.

Vertical active lines
Specify the height in lines of the active image area sampled.

Horizontal start
Select for the left edge of the active video.

Vertical start
Select for the top edge of the active video.

Total pixels
Specify the width in pixels of the total image area sampled.

Pixel phase
Adjust the pixel sampling point for a selected input.

For YUVp or RGB input only

Picture Control

INPUT CONFIG

MENU

PICTURE CONTROL — NEXT → **H POS V 000 000** — NEXT → **H SIZE V 1024 768** — NEXT → **BRIGHT CONT 064 064** — NEXT → *Tint adjustment applicable only for NTSC composite or S-Video inputs* **COLOR TINT 064 064** — NEXT

Horizontal position
Adjust horizontal image position.

Vertical position
Adjust vertical image position.

Horizontal sizing
Adjust horizontal image sizing.

Vertical sizing
Adjust vertical image sizing.

Brightness
Adjust image brightness.

Contrast
Adjust image contrast.

Color
Adjust color of image.

Tint
Adjust tint of image.

Only applicable when zoom is over 100 % **H PAN V 000 000** ← NEXT ← **ZOOM 100%** ← NEXT ← **DETAIL 064**

Pan
Move the "zoomed" image horizontally or vertically. Available only when zoom is set over 100%.

Zoom
Allows for 100-200% zoom while the aspect ratio remains unchanged.

Detail
Adjust sharpness of the image.

Menu System, cont'd

Output Configuration menu

```
┌──────────────┐
│   PICTURE    │
│   CONTROL    │
└──────────────┘
       │ MENU
       ▼
┌──────────────┐          ┌──────────────┐          ┌──────────────┐          ┌──────────────┐
│   OUTPUT     │─ NEXT →   │  RESOLUTION  │─ NEXT →   │   FORMAT     │─ NEXT →   │  H SYNC V    │─ NEXT →
│   CONFIG     │          │ 1024x768@60  │          │    RGBHV     │          │ NEG     NEG  │
└──────────────┘          └──────────────┘          └──────────────┘          └──────────────┘
                             ◄► ◆                      ◄► ◆                      ◄► ◆
                             ●  ●                      ●  ●                      ●  ●
                              │                         │                         │
                              ▼                         ▼                         ▼
                         Resolution refresh rate    Output type              Sync polarity combinations
                         Default: 1024x768 @ 60 Hz  • RGBHV (default)        • H Neg   V Neg  (default)
                                                    • RGBS                   • H Neg   V Pos
                                                    • RGsB                   • H Pos   V Neg
                                                    • Y, R-Y, B-Y            • H Pos   V Pos

                                                                             NOTE  This information only appears
                                                                                   when the sync polarity is
                                                                                   applicable and is based on the
                                                                                   selected output format.
```

Audio Configuration menu

```
┌──────────────┐
│   OUTPUT     │
│   CONFIG     │
└──────────────┘
       │ MENU
       ▼
┌ ─ ─ ─ ─ ─ ─ ┐
    AUDIO              ┌──────────────┐
│   CONFIG    │─ NEXT → │  IN1  LEVEL  │─ NEXT →
 ─ ─ ─ ─ ─ ─ ─        │     0dB      │
(audio models only)    └──────────────┘
                          ◄► ◆
                          ●  ●
                           │
                           ▼
                      Input level
                      Adjust the input
                      gain/attenuation from
                      -15dB to +9dB of the
                      selected input.
```

Memory Preset menu

```
        (Audio models only)
┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐
      AUDIO
│     CONFIG      │
 ─ ─ ─ ─ ─ ─ ─ ─ ─
         │ MENU
         ▼
┌──────────────┐          ┌──────────────┐          ┌──────────────┐
│   MEMORY     │─ NEXT →   │   IN1  SAVE  │─ NEXT →   │  IN1  CLEAR  │─ NEXT →
│   PRESETS    │          │ <N/A> 1 2 3  │          │ <N/A> 1 2 3  │
└──────────────┘          └──────────────┘          └──────────────┘
                             ◄► ◆                      ◄► ◆
                             ●  ●                      ●  ●
                              │                         │
                              ▼                         ▼
                         Saving (SAVE) memory presets    Clearing (CLR) memory presets
                         • Save the currently selected input's   • Clear the currently selected input's
                           picture control information.            saved preset.
                         • Up to 3 presets per input can be       • Up to 3 presets per input can be
                           selected < > and saved.                  selected < > and cleared. N/A is
                           N/A is the default.                       the default.
                         • Save a preset by pressing the NEXT     • Clear a preset by pressing the
                           button.                                  NEXT button.
```

IP Configuration menu

```
MEMORY
PRESETS
```
│ MENU

```
IP                NEXT →   I  196.168      NEXT →   S  255.255      NEXT →   G  000.000      NEXT →
CONFIG                     P  254.254               M  000.000               M  000.000
```
View IP address   View the subnet mask   View gateway IP address
of the unit.   of the unit.   of the unit.

Advanced Configuration menu

```
IP
CONFIG
```
│ MENU

```
ADVANCED    NEXT →   AUTO IMAGE    NEXT →   BLUE MODE     NEXT →   AUTO SWITCH   NEXT →   RGB DELAY    NEXT →
CONFIG               <OFF>    ON            <OFF>    ON            <OFF>    ON            0.0 sec.
```

Auto imaging
When auto image is on, the unit automatically sizes and centers each new input.

Blue mode
When set to on, only the sync and blue video signals are passed to the display

Auto switching
The unit switches to the highest numbered input, which as a signal present when auto switching is on.

RGB delay
Can be set from 0 to 5.0 seconds in 0.5 steps.

```
← NEXT   AUTO MEMORY   ← NEXT   REFRESH LOCK   ← NEXT   ENHANCE MODE   ← NEXT   TEST PATTERN   ← NEXT   OSD LABEL
         <OFF>    ON            <OFF>    ON             <OFF>    ON             OFF                     2 sec.
```

Auto Memory
When set to on, the unit automatically saves the input and picture control settings for inputs 2 and 4.

Refresh Lock
When set to on, the vertical ouptut rate will lock on to the incoming vertical refresh rate.

Enhance Mode
When set to on, the automatic gain control of the input signal is enabled.

Test patterns
• Off
• Crop
• Alternating pixels
• Color bars

OSD label duration
Can be set from 0 OFF (no OSD) to 5 seconds in 1 second steps.

Exit menu

```
            Default Cycle
                                        2 sec.
INPUT 1          - - - →     OUTPUT
COMPOSITE                   1024 x 768@60
            ← 2 sec. -
```
│ MENU

```
START AUTO
IMAGE ON IN1
```
│ MENU

```
INPUT                    MEMORY
CONFIG                   PRESETS
```
│ MENU   │ MENU

```
PICTURE                  IP
CONTROL                  CONFIG
```
│ MENU   │ MENU

```
OUTPUT                   ADVANCED
CONFIG                   CONFIG
```
│ MENU   │ MENU

(Audio models only)
```
AUDIO                    TO EXIT MENU    NEXT →
CONFIG                   PRESS NEXT
```
│ MENU   │ MENU

Menu System, cont'd

Executive Mode menu

Enable Executive Mode

Default Cycle

```
            Default Cycle
    ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
    ↓                        2 sec. │
┌───────────┐    2 sec.    ┌───────────┐
│  INPUT 1  │  ─ ─ ─ ─ →   │  OUTPUT   │
│ COMPOSITE │              │1024 x 768@60│
└───────────┘              └───────────┘
```

Press for
2 seconds*

Menu   Next

```
┌───────────┐
│  EXE MODE │
│  ENABLED  │
└───────────┘
```

10 sec.
timeout

Disable Executive Mode

Default Cycle

```
            Default Cycle
    ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
    ↓                        2 sec. │
┌───────────┐    2 sec.    ┌───────────┐
│  INPUT 1  │  ─ ─ ─ ─ →   │  OUTPUT   │
│ COMPOSITE │              │1024 x 768@60│
└───────────┘              └───────────┘
```

Press for
2 seconds*

Menu   Next

```
┌───────────┐
│  EXE MODE │
│  DISABLED │
└───────────┘
```

10 sec.
timeout

DVS 304

Appendix

Reference Material

Specifications

Part Numbers and Accessories

Serial Digital Interface (SDI) Card Installation

Reference Material

Specifications

Video input

Number/signal type .... 1 (RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS,
component video, S-video, composite video
1 composite video, S-video, component video (Y, R-Y, B-Y)
1 S-video, 1 SDI (optional, DVS 304D only), 1 composite video

Connectors .... (1) 15-pin HD female: RGBHV, RGBS, RGBcvS, component video, S-video,
composite video
3 BNC female component video, S-video, composite video
1 BNC female: SDI (DVS 304D, DVS 304AD only)
(1) 4-pin mini DIN female: S-video
1 BNC female: composite video

Nominal level .... 1 Vp-p for Y of component video and S-video, and for composite video
0.7 Vp-p for RGB and for R-Y and B-Y of component video
0.3 Vp-p for C of S-video

Minimum/maximum levels .... Analog: 0.0 V to 1.0 Vp-p with no offset

Impedance .... 75 ohms

Horizontal frequency.................... 15 kHz to 100 kHz

Vertical frequency......................... 50 Hz to 120 Hz

Resolution range .... 640x480 to 1600x1200* incl. tri-level sync inputs for 480p, 720p, 1080i,
and 1080p
* Only the reduced blanking version of the 1920x1200 resolution is sampled
at full bit rate

Return loss .... <-30 dB @ 5 MHz

DC offset (max. allowable)........... 1.5 V

Video processing

Decoder... 9 bit digital

Digital sampling............................ 24 bit, 8 bits per color; 13.5 MHz standard

Colors.. 16.78 million

Video output

Number/signal type .... 2 scaled or pass-through RGBHV, RGBS, RGsB or
scaled component video (Y, R-Y, B-Y)

Connectors .... 5 female BNC
1 female 15-pin HD

Nominal level .... 1 Vp-p for Y of component video
0.7 Vp-p for RGB and for R-Y and B-Y of component video

Minimum/maximum levels .... 0.0 V to 0.7 Vp-p

Impedance .... 75 ohms

Scaled resolutions......................... 640x480[1,2,3,4,5,6], 800x600[1,2,3,4,5,6], 852x480[1,2], 1024x768[1,2,3,4], 1024x852[1,2,3,4],
1024x1024[1,2,3], 1280x768[1,2,3,4], 1280x800[1,2], 1280x1024[1,2,3], 1360x765[1,2,3],
1365x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3], 1400x1050[1,2], 1440x900 [2,3], 1600x1200[1,2],
1680x1050[2], HDTV 480p[2], 576p[1,5], 720p[1,2], 1080i[1,2], and 1080p[1,2,3]
[1] = at 50 Hz [2] = at 60 Hz [3] = at 72 Hz (75 Hz for 1440x900, 24 Hz for 1080p)
[4] = at 96 Hz [5] = 100 Hz [6] = 120 Hz

Sync

Input type .... (RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS

Output type.................................... RGBHV, RGBS, RGsB, and component video tri-level

Standards....................................... NTSC 3.58, NTSC 4.43, PAL, SECAM

Input level .... 0 V to 1.0 Vp-p

Output level .... TTL: 5.0 Vp-p, unterminated
Input impedance .... 510 ohms
Output impedance .... 75 ohms
Max input voltage .... 5 Vp-p
Max. propagation delay .... 20 ns
Polarity... Positive or negative (selectable)

Audio — DVS 304 A, DVS 304 AD

Gain .... Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response .... 20 Hz to 20 kHz, ±0.05 dB
THD + Noise .... 0.03% @ 1 kHz at nominal level, 0 dB gain
S/N .... >90 dB at maximum output (unweighted)
Crosstalk .... <-103 dB, wideband, @ 1 kHz (20 Hz to 20 kHz), fully loaded
Stereo channel separation .... >80 dB @ 1 kHz
CMRR .... >75 dB @ 20 Hz to 20 kHz

Audio input — DVS 304 A, DVS 304 AD

Number/signal type .... 4 stereo, balanced/unbalanced
Connectors .... (4) 3.5 mm captive screw connector, 5 pole
Impedance .... >18k ohms unbalanced, 24k ohms balanced, DC coupled
Nominal level .... +4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level .... +18 dBu, (balanced or unbalanced) at 1%THD+N
Input gain adjustment .... –15 dB to +9 dB, adjustable per input

NOTE   *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output — DVS 304 A, DVS 304 AD

Number/signal type .... 1 stereo, balanced/unbalanced
Connectors .... (1) 3.5 mm captive screw connector, 5 pole
Impedance .... 50 ohms unbalanced, 100 ohms balanced
Gain error .... ±0.1 dB channel to channel
Maximum level (Hi-Z) .... >+21 dBu, balanced or unbalanced at 1% THD+N
Maximum level (600 ohm) .... >+15 dBm, balanced or unbalanced at 1% THD+N
Output volume range................... 0 to 100 (-52 dB to 0 dB) in 0.5 dB increments from steps 4 to 100, 1 dB
                                               increment from step 0 to 3)

Control/remote — decoder/scaler

Serial control port .... RS-232, 9-pin female D connector
Baud rate and protocol .... 9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations. 1 = input 1 select
                                               2 = TX
                                               3 = RX
                                               4 = input 2 select
                                               5 = GND
                                               6 = input 3 select
                                               7 = input 4 select
                                               8 = n/a
                                               9 = n/a (reserved)
Ethernet control port.................... 1 RJ-45 female connector
Ethernet data rate......................... 10/100Base-T, half/full duplex with autodetect
Ethernet protocol.......................... ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, SMTP

Reference Material, cont'd

Contact closure .... 9-pin female D connector (same as RS-232 connector)

Contact closure pin configurations. See pins 1, 4, 5, 6, and 7 above

IR controller module..................... Extron IR 901 (optional)

Program control............................ Extron's control/configuration program for Windows®
Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer, Telnet

General

Power .... 100VAC to 240VAC, 50/60 Hz, 30 watts, internal, autoswitchable

Temperature/humidity .... Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Cooling:

    DVS 304, DVS 304D .... Convection, vented on sides and top

    DVS 304A, DVS 304AD .... Convection, vented on sides

Mounting

    Rack mount

        DVS 304, DVS 304D .. Yes, with optional 1U, 9.5" deep rack shelf (RSU 129, #60-190-01; RSB 129, #60-604-01)

        DVS 304A, DVS 304AD Yes, with included brackets

    Furniture mount

        DVS 304, DVS 304D .. Yes, with optional MBU 125 Under-desk Mounting Kit, #70-077-01; or MBD 129 Through-desk Mounting kit, #70-077-02

Enclosure type .... Metal

Enclosure dimensions

    DVS 304, DVS 304D .... 1.75" H x 8.75" W x 10.5" D (1U high, half rack wide)
4.4 cm H x 22.2 cm W x 26.7 cm D
(Depth excludes connectors and knobs.)

    DVS 304A, DVS 304AD .... 1.75" H x 17.5" W x 10.5" D (1U high, full rack wide)
4.4 cm H x 44.4 cm W x 26.7 cm D
(Depth excludes connectors and knobs. Width excludes rack ears.)

Product weight

    DVS 304, DVS 304D .... 3.3 lbs (1.5 kg)

    DVS 304A............................ 6.5 lbs (2.9 kg)

    DVS 304AD .... 6.8 lbs (3.1 kg)

Shipping weight

    DVS 304, DVS 304D .... 6 lbs (3 kg)

    DVS 304A, DVS 304AD .... 11 lbs (5 kg)

DIM weight

    DVS 304, DVS 304D .... 12 lbs (6 kg)

Vibration .... ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

    Safety................................... CE, C-tick, CUL, UL

    EMI/EMC .... CE, C-tick, FCC Class A, ICES, VCCI

MTBF... 30,000 hours

Warranty .... 3 years parts and labor

NOTE   *All nominal levels are at ±10%.*

NOTE   *Specifications are subject to change without notice.*

Part Numbers and Accessories

Included parts

These items are included in each order for a DVS 304 scaler:

Included parts	Part number
DVS 304 or DVS 304 D	60-736-01/03
Rubber feet (self-adhesive) (4)	
IEC power cord	
Tweeker (small screwdriver)	
User's Manual	
DVS 304 Windows-based control program	

Included parts	Part number
DVS 304 A or DVS 304 AD	60-736-02/04
Rubber feet (self-adhesive) (4)	
Rack and through-desk mounting kit	70-077-03
IEC power cord	
Tweeker (small screwdriver)	
User's Manual	
DVS 304 Windows-based control program	

Accessories

These items can be ordered separately:

Accessories	Part number
IR 902 remote control	70-495-01
SDI video input card	70-168-01
1U Universal Rack Shelf Kit (DVS 304 D only)	60-190-01

Reference Material, cont'd

Serial Digital Interface (SDI) Card Installation

The optional SDI card may be installed in the scaler if it does not already have an input for a serial digital interface signal. We recommend that you send the unit in to Extron for service and updates.

NOTE *Changes to electronic components must be performed by authorized service personnel only.*

Follow these steps to install an SDI card in the DVS 304.

1. Disconnect the AC power cord from the DVS 304 to remove power from the unit.

WARNING *To prevent electric shock, always unplug the DVS 304 scaler from the AC power source before opening the enclosure.*

2. Remove the scaler from the rack or furniture.

3. Remove the cover of the scaler (the top half of the enclosure) by removing the screws, then slide the cover back to clear the connectors and lift it straight up (figure B-1).
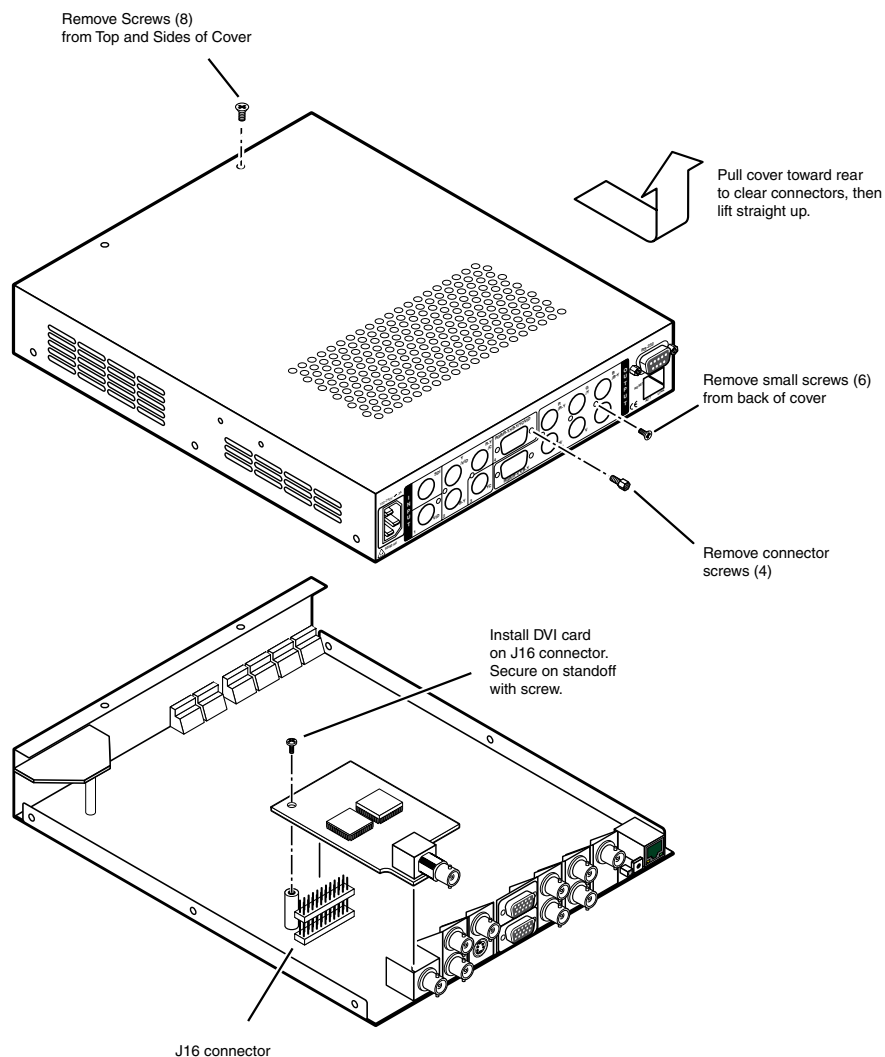

Remove Screws (8) from Top and Sides of Cover

Pull cover toward rear to clear connectors, then lift straight up.

Remove small screws (6) from back of cover

Remove connector screws (4)

Install DVI card on J16 connector. Secure on standoff with screw.

J16 connector

Figure B-1 — Installation of the SDI card

WARNING   *Do not touch any switches or other electronic components inside the scaler. Doing so could damage the scaler. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with any electronic component replacement. A grounding wrist strap is recommended.*

4. Locate the SDI card standoff located near the middle rear portion of the main circuit board (looking from above with the front panel nearest to you)

5. Remove the plastic SDI cover from the rear SDI connector opening of the scaler and position the SDI card at an angle with the SDI connector protruding from the rear SDI connector opening.

6. The SDI card has a 20-pin socket on the underside which should align with the 20 pins on the main circuit board. Be sure to align the pins properly, in order to prevent bending the pins, before pressing the SDI card firmly in place against the standoff. The mounting hole on the SDI card should now be directly over the standoff.

7. Insert the card's installation screw through the SDI card's mounting hole and gently tighten it into the standoff.

8. Install the SDI connector's hex nut and keep the SDI card from twisting as the nut is tightened.

9. Replace the top cover on the DVS 304 scaler, and fasten it with the screws that were removed in step 3.

10. Rack/furniture mount the scaler, if desired, and reconnect the AC power cord.

Reference Material, cont'd

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.